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Sir Keith and the SSRC

Bashing the Social Science Research Council is an easy game, but thinking up a better organization for post-graduate study and research in the social sciences is a serious and difficult task. Sir Keith Joseph has concentrated almost exclusively on the first of his twin decisions to cut the SSRC's budget disproportionately and to ask Lord Rothschild to carry out a "review" of the council's role. Let us hope Lord Rothschild will concentrate with equal emphasis on the second and more important aspect - even if he is, in the view of the Secretary of State, "a tried and respected operator".

It would certainly be wrong if the focus of his review was on the shortcomings of the SSRC rather than on the better organization of research in the social sciences. For it is too easy to criticize the SSRC. The social sciences are easier prey for anti-intellectual predators than the natural sciences for several reasons. They sometimes lack the apparently unshakable scientific foundations enjoyed by physics, chemistry, medicine and so on, which so impress or at any rate intimidate laymen.

They are comparatively recent disciplines, at least in terms of their present organization. Many of their most influential intellectual figures have been foreigners, never a good thing in British eyes. As disciplines they have an uncomfortable habit of raising social consciousness and so indirectly promoting political action. For these last two reasons the social sciences are often seen as more ideological than other disciplines, which again jars with the British taste for pragmatism. The fact that the wars of the structuralists, behaviourists, Darwinists and so on are sufficient proof that non-social science disciplines can be equally "ideological" does not seem to have modified the special guilt of the social sciences in the eyes of anti-intellectuals.

Secondly, of course, it has to be admitted that within most social sciences there is not the same degree of intellectual certainty as in the natural sciences or, much more arguably, the humanities. Orthodoxies are much weaker and more frequently challenged. An occasionally chaotic pluralism takes their place. Most people, of course, would see such qualities as evidence of intellectual dynamism and creativity. But they do make the job of the SSRC much more difficult than those of the other research councils: The SSRC must try to impose some kind of order, however tentative and pragmatic, onto an academic landscape that has no clear signposts and is anyway constantly shifting. Inevitably, therefore, it is less successful than the other research councils with their better mapped terrains, if success is judged by the strength of the legitimacy enjoyed by a research council's decisions and by the absence of debilitating controversy.

Thirdly, the political footwork of the SSRC has not always been as sure as it might have been. The council has managed to alienate an influential part of its constituency within higher education by its determination to make social science research more applied, overtly at any rate. This, its critics suggest, has been achieved at the cost of undermining the status and the independence of the separate disciplines. Indeed some critics would go further and argue that the SSRC's cosmetic enthusiasm for wrapping up research in "applied" packages has opened the doors to the enemies of the social sciences, either by giving them models of relevance to parrot or by raising the political visibility and so vulnerability of social sciences.

of the observed shortcomings in the organization of social science research have deep roots in the character of the constituent disciplines and their mutual relationships. To imagine that the SSRC can work as smoothly and with as little controversy as, say, the Medical Research Council is to show an incomplete understanding of the issues. Not that subtle understanding is for Sir Keith Joseph whose behaviour towards the SSRC can only be described as vindictive. It is clear that the Secretary of State would like to abolish the council if he felt he could get away with it. It is not yet clear whether Lord Rothschild's review was conceived as the instrument to accomplish this decency or as a bureaucratic device to obstruct it in best Yes, Minister style. No doubt Lord Rothschild will produce an entirely independent report that may disappoint the hidden sponsors of his review.

Sir Keith appears to have launched his attack on the SSRC as much because of his hostility towards the social sciences as because of any assessment of the competence of the council. He is said to believe that the social sciences do not "exist" as coherent disciplines. At a time when the trend is for the social sciences to have an increasing influence over the intellectual styles of several traditional humanities subjects apt to be in-

cluded as important elements in many courses in the natural sciences, medicine, and engineering, it has to be said that not many people in higher education will agree. In any case it is almost alarming that such existentialist questions appear to be having such a direct and immediate influence over policy making. It is even more alarming that Sir Keith should apparently regard himself as an intellectual commissar. In a constitutional government that is also by its very nature a limited government the public responsibilities of a minister should not be guided so predominantly by his idiosyncratic intellectual prejudices. It is rather as if a Prime Minister decided to disestablish the Church of England on the grounds that he did not believe in God.

In the British education system a very high value is placed, rightly, on institutional, professional, and individual autonomy. Beyond broad issues concerning the organization, scope, and financing of education, the Secretary of State has, and should continue to have, limited power. It is simply not his business to judge the academic preoccupations of institutions and individuals in higher education, any more than it is his business to decide what should be taught in school classrooms. Yet in his vendetta against the social sciences Sir Keith is coming much too close for comfort to an intellectual totalitarianism which personally and politically he must abhor.

The DES's recent guidance to colleges and departments of education which in effect encouraged them to discriminate against PGCE applicants who had read social sciences, the disproportionate cut in the SSRC's budget, and the Rothschild review, taken in the context of Sir Keith's hostility, add up to a picture of ugly and excessive bias. A second complaint by Sir Keith against the SSRC is equally alarming. He is said to believe that too

much social science research seems to produce conclusions that are broadly sympathetic to left-wing views however "neutral" its starting point. To sustain such a complaint of systematic and consistent left-wing bias it would have to be accepted that hundreds, even thousands, of researchers and of those involved in reviewing and refereeing research were engaged in evasion of their professional responsibilities on a staggering scale - in other words, it is unlikely to be true. After all a "bias" on such a widespread and consistent scale comes rather close to truth as contemporarily understood. For a Secretary of State for Education to stigmatize the current balance of academic interests within particular disciplines or groups of disciplines as "bias" is again to come dangerously close to intellectual totalitarianism.

Sir Keith's other complaints against the SSRC are at any rate legitimate. He is said to believe that the council has not adopted a sufficiently pluralistic approach to the research it chooses to support. In fact there are many who, while accepting that the SSRC has a tendency like all research councils to be cliquey, would accuse it of exactly the opposite offence, a failure to establish and back clear priorities.

It is probably true that the SSRC's attempts to build up centres of, if not excellence at any rate, concentration in social science research have not been pursued with as much emphasis as they might have been.

Sir Keith is also said to believe that the SSRC is not an especially well run organization. He may be right, but he should perhaps consider what contribution political interference and disproportionate budget cuts can make to improvement.

In the end it is difficult to see what alternative there is to the SSRC. The "privatization" of social science research however welcome to Sir Keith would quite clearly lead directly to the emancipation of much of the most important research. The customer-contractor has clear limitations, especially perhaps in the social sciences where the eventual beneficiaries of even applied research may be difficult to define in any simple way.

There is, after all, nothing to prevent any customer sponsoring research in a university or polytechnic at the moment. But many of the more plausible customers of such research are themselves part of the public sector, Whitehall, local government, and other public bodies, so the value of switching money from one (public) pocket to another is not clear. Its likely effect would be to weaken the present rather shaky commitment to social science research because at a time when all budgets have come under great pressure the temptation to "divert" funds from long-term purposes, like research, to short-term ones, like paying staff, is almost irresistible.

Nor must the role of research councils in protecting the disciplines themselves be neglected, a role that will assume increasing importance as the cuts undermine the capacity of the universities to undertake research out of their own income. Indeed, far from supporting the abolition or attenuation of the SSRC, the logic of present events suggests that the humanities too may eventually require the more explicit organization and support of research. The UGC cannot expect to do it all by co-opting universities into protecting minority subjects. At a time when the whole, towards support system is breaking towards obscurity, the abolition of the SSRC would be an act of stupidity that could be explained but not justified only by political prejudice.

Laurie Taylor



Ah, Mr Purder! Do sit down. I believe some of the committee here would like to ask you a few questions about your qualifications for this job. You remember, Mr Purder. The one we thought might rather suit you when we were having that chat in my department last week. What job's that? Oh, that one. Oh yes. Quite slipped my mind. Sort of Head of Polytechnics and that kind of thing. Chairman of the new Board for Local Authority Education. Exactly. Well, yes, I'd be only too pleased to answer any questions. Have you met any polytechnic students, Mr Purder? Not per se. But of course you get all sorts up at Cambridge. Right across the board. From the privileged to the quite overwhelmingly privileged. I think I'd use the word cross-section. But you'll be talking to some polytechnic students? No doubt about it. Consultation is the name of the game. Just as soon as their term starts I'll be popping in for a chat. It started four weeks ago, I believe, Mr Purder. Really? Already? Good heavens. You'll also talk to staff, Mr Purder? No doubt about it. I'll make a positive point of taking the first opportunity to join everyone in the senior common room. Staff room. Mr Purder. Yes, I'll certainly pop in there as well. Have you any strong views on vocational courses? Vocational? Courses directly related to future occupations. Oh yes, of course. Very much in favour. I mean I'm a product of that sort of course myself. Took a degree in ancient history at Cambridge and here I am teaching ancient history at Cambridge. Oh yes. Thank you Mr Purder. May I finally ask you if you have real sympathy with the attempts by colleges and polytechnics to provide, through the DipHE and a variety of evening programmes and shop-front courses, a real opportunity for large sections of the working class to obtain, through higher education which has been consistently denied them by the university system, and would you therefore regret the ways in which such a programme has been undermined by the serious cuts of recent years? Cuts. My word. Have the polytechnics been cut as well? Must have missed that. Yes, I'll have a damn good try. Can't say fairer than that, can I? Thank you, Mr Purder. That's all. Yes, I think we're unannounced. You mean I've got the job? I'm afraid not. The general feeling is that you're just a little too - how shall I put it - grass roots.

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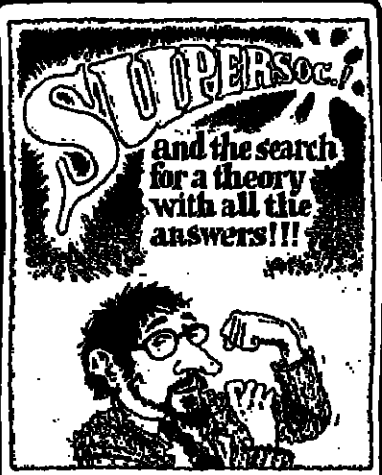
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London cuts package revealed

by Ngaio Crequer and Robin McKie
A package of department closures, mergers and staff cuts have been proposed for London University by special review groups set up to make major spending reductions. The physical sciences are to be most severely affected with departments being restricted to four or five sites and staff being cut from 425 to 385. In social studies, there are warnings against proliferation of courses and a call to look at both polytechnic and university provision. In languages there is a whole series of proposals for departmental mergers among the colleges. Amalgamations of physical sciences departments are now "imperative as against desirable", states the report of the physical sciences committee chaired by Professor Sam Edwards. "We do not believe it possible now, and even less in future, for London to carry more than four or five world class departments in chemistry, physics, geology and the mathematical sciences". These schools should be sited at Imperial, King's, Queen Mary and University Colleges and their deficiencies counteracted by mergers with smaller schools. A possible fifth school could be set up through a merger between Brunel University and Royal Holloway. Westfield College's departments of mathematics, physics, and chemistry would be moved to Queen Mary College while its computer science would go to King's. Queen Elizabeth's physics and chemistry would be merged with King's; Bedford's physics would go to University College, its chemistry to either University College or Royal Holloway; and Chelsea College's physics would be reduced to merely a part of electronics there. Imperial College's physical sciences was not considered because the college receives separate funding. "We can only record our amazement that a nation crying out for technologically skilled manpower can manage to leave its leading technological institution in such financial straits". The social studies committee, chaired by Sir Alec Cairncross, warns of the danger of following fashion and discriminating against the social sciences. It also points out that London has not seen the same expansion in this area as the rest of the country. Nevertheless it makes some telling points. The largest contingent of sociologists in London, for example, is in the polytechnics, and there are more in other universities and hospitals in London all outside the committee's remit. It calls for a rationalization on a university wide basis. In London there should be one major department, which should be at the LSE, and the Bedford course should cease. It wants Chelsea to abandon social work (as the school itself has proposed) and psychological and sociological studies. It says there are difficulties in courses recon-

and chemistry would be merged with King's; Bedford's physics would go to University College, its chemistry to either University College or Royal Holloway; and Chelsea College's physics would be reduced to merely a part of electronics there. Imperial College's physical sciences was not considered because the college receives separate funding. "We can only record our amazement that a nation crying out for technologically skilled manpower can manage to leave its leading technological institution in such financial straits". The social studies committee, chaired by Sir Alec Cairncross, warns of the danger of following fashion and discriminating against the social sciences. It also points out that London has not seen the same expansion in this area as the rest of the country. Nevertheless it makes some telling points. The largest contingent of sociologists in London, for example, is in the polytechnics, and there are more in other universities and hospitals in London all outside the committee's remit. It calls for a rationalization on a university wide basis. In London there should be one major department, which should be at the LSE, and the Bedford course should cease. It wants Chelsea to abandon social work (as the school itself has proposed) and psychological and sociological studies. It says there are difficulties in courses recon-

ing academic input and professional social work requirements. The report warns against proliferation of courses and says it views with concern the multiplication of courses, diplomas and degrees. In geography, for example, it lists 43 different courses provided at the university, undergraduate and taught master's, including joint degrees. In 15 of these (excluding Birkbeck), there are fewer than ten students. It wants regular reviews of recruitment. The languages committee, chaired by Professor J Cruickshank, stresses the need for more inter-collegiate teaching, and in most subjects calls for two-college mergers. It recommends that German departments be reduced from seven to five, that classics be concentrated in four units at London, ceasing at Westfield, and that Italian at Bedford and University College be merged, and phased out at Royal Holloway. In English and French it says that student numbers should decrease but numbers of departments should remain unchanged. It says that in some subjects, notably but not exclusively French, resources are wasted in excessive duplicate teaching, leaving little time for productive research. Also the teaching of special subjects to small groups independently on one site (as in some English studies) "was felt to be a luxury in a period of retrenchment". Further details, page 3



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Graduate job market shrinking

by Paul Flather
Another bleak year is ahead for graduates with the employment market set to shrink by up to another 10 per cent to its worst level at any time since the war, according to figures released this week. Employers' representatives and senior careers advisers warned at a press conference in London that at the end of the year one in five graduates could still be looking for work. Early surveys also reveal about 10,000 university and polytechnic graduates, between 11 and 12 per cent of the 1981 total, are still without work six months after registering as unemployed. But this figure is well below some estimates which last year projected that between 15 and 20 per cent would be left jobless. The decline in the graduate job market, on top of a 12 per cent fall in recruitment in 1981, comes at a time when the supply of graduates continues to soar, and is expected to increase by a further nine per cent in 1982. The figure came from the annual forecasts of the Association of Graduate Careers Advisory Services, the Central Services Unit for Careers and Appointments Services, and the Standing Conference of Employers of Graduates. Careers advisers warn that while biological sciences have had difficulty finding jobs for some years, engineers and physical scientists will now also have to widen their search outside the immediate confines of their subject. They say "In the present competitive climate, we wish to reiterate that personal qualities are often the deciding factor in being selected for a job. Clear presentation of academic and non-academic skills, on application forms and in interview, are crucial". But the employers' representatives point out that prospects are likely to be far worse for school-leavers. Current reports suggest one in two may be without work at the end of 1982. The groups do expect increased demand in two or three years time as the economy picks up.



Sir Keith Joseph, Secretary of State for Education, meets the press before an informal dinner with the eight Scottish university principals. He said that cuts for "one or two universities" might be spread over a longer period at the discretion of the University Grants Committee. On his arrival at Edinburgh University, Sir Keith was pelted with snowballs by demonstrators.

Student loans may be introduced in phases

Student grants would be gradually halved over a period of about 10 years, say the latest proposals to introduce student loans which are being considered by the Department of Education and Science. If agreement was reached with the banks on repayment terms, loans would at first be offered to students as a replacement for a quarter of their grants. There would then be phased increases in proportion to be met from loans, until it reached half. Unlike the scheme examined by Dr Rhodes Boyson when he was under secretary for higher education, the new arrangements would not necessarily mean scrapping the parental contribution to grants. And the grant would always account for at least 50 per cent of student support. Although the intention is to persuade the banks to make the loans, it is recognised that interest rates would need to be considerably lower than commercial rates. Informal approaches to the City are expected to precede formal discussions with the banks, who would want Government guarantees to cover the security of what would be considerable extra burden. A senior banker said the banks would also need "commercial" returns on their loans, and that the Government would have to decide the level of subsidy. Sir Keith Joseph, Secretary of State for Education, supports the scheme, not for financial reasons, but because he believes it is wrong for students, whose job prospects are

Audit reveals lack of control

by Charlotte Barry
The main cause of the cash crisis at the Polytechnic of Central London is lack of accountability and control, according to a preliminary audit carried out by Inner London Education Authority officers. The team of auditors was sent in to examine the polytechnic's books last autumn after the authority refused to pay £50,000 interest charges on PCL's £500,000 deficit. Their report reveals general lack of accountability and control, absence of a comprehensive internal budget and the lack of specific budgets for certain areas. The questions raised have already prompted senior ILEA councillors to urge the resignation of the director Dr Colin Adamson. At a meeting just before Christmas Dr Adamson was told it would be in the best interests of the polytechnic for him to resign or retire early. Mr Neil Fletcher, chairman of ILEA's further and higher education sub-committee, also told Mr E Walter Oakley, chairman of PCL's court of governors, that the authority would not help clear the deficit unless governors changed the polytechnic's top management. The auditors conclude that the crisis has been caused by senior management's ignorance of overall budgets and assumptions made in their compilation, and the further financial effects of subsequent decisions made by Dr Adamson and senior staff. It says the budgeting processes are unsound, because they do not involve heads of departments and the restructure enough both when the budget is first being drawn up and in any subsequent reallocation of resources. The report criticises the lack of a comprehensive internal budget for the polytechnic that displays all activities, so that the restructure can consider the total budget at the beginning of the year.

Confidence lost in UMIST principal

A ballot of lecturers at the University of Manchester Institute of Science and Technology has produced an overwhelming vote of no confidence in the principal, Professor Robert Haszeldine, and the way he has handled the cuts. Member of the Association of University Teachers, which conducted the ballot, voted 5-1 against the principal. In the poll of 535 members (which is 83 per cent of the potential membership), 364 papers were returned, a 68 per cent turnout. There were nine spoiled papers. To the question: "Are you confident in the principal's handling of the crisis so far?", 27 staff said yes, 294 said no and 34 were undecided. Asked if they had confidence in Professor Haszeldine as principal, 31 said yes, 246 said no and 58 were undecided. To the question: "Are you satisfied that, in the development of the committee structure of UMIST has been properly used without bias or manipulation?", 25 said yes, 252 said no and 78 were undecided. Some 307 people were not satisfied that the methods of consultation had been fair and reason-

able (28 were, 20 were undecided). Professor Haszeldine said this week he was not surprised at the poll. "We are going through a particularly bad phase. We face a 24 per cent cut and we have spent about 100 hours in committee 'trying to work it out,'" he said. "Every department is taking a cut, from minus 10 per cent to minus 40 per cent, with one or two deeper than that. Obviously, nobody is very happy about it. But every department has been consulted, there has been an enormous amount of consultation".

National body threat lifted

by Charlotte Barry

A threat to the interim national body was averted this week after Mr William Waldegrave, Under-Secretary for Higher Education, agreed to extend the membership of the proposed board of officials.

The CDP has also passed an emergency resolution calling on the DES to delay the appointment of a chief officer to the national body so the post can be advertised. At the beginning of the week the DES told directors they could forward nominations for the shortlist, but there would be no delay in the appointment and interviews would go ahead as planned.

He added: "Given the conditions it would be churlish not to try and make it work but if it doesn't we will have to reconsider our position. The DES has also assured the directors that the work of the main committee for the interim body, chaired by Mr William Waldegrave, Secretary of State for Education, will not undermine the board. Dr Rickett said it had agreed not to exert detailed control over the board's sub-committees.

Too many pupils, too few teachers

by Patricia Santinelli

Doubting the number of newly trained primary teachers would not meet projected demand in 1990, according to the latest Department of Education and Science forecast.

This projection in a DES paper to one of the sub-committees of the Government's Advisory Committee on Teacher Training shows that a swing to primary output of 40 per cent and a 10 per cent cut in total output, currently 17,500, would not meet demand.

It is based on figures which show that by the end of the decade the demand for primary entrants will have risen from 4,600 to 10,000, while that for secondary trained teachers will be halved from 5,000 to 2,900.

A major problem facing the committee is how to accommodate their own recommended 10 per cent cut or 20 per cent maximum cut proposed by the Secretary of State for Education while encouraging a major swing to primary training. According to the DES figures the present target output of 15,750 will be needed in each year from 1988/89.

In its proposals on how to increase primary teacher training, the DES says it might be possible to increase the present universities target for both BED and PGCE primary training from 574 to 1,200.

It argues, however, that this will be more difficult to achieve in the maintained sector because of difficulties in recruitment to the BED. Places could be increased by 1600 at most split between 1,000 to PGCE and 600 to BED representing a 15 per cent increase and bringing the total for both sectors to some 7,600 which would still fall short of demand.

During the decade the requirement for primary teachers will be concentrated in the ages of 5-9, an area hardly covered by universities. In contrast the public sector with the production of 4,200 primary teachers offers a better base for expansion, particularly for the early years.

One idea is that the university sector's contribution could be enhanced if primary training in some 17 departments of education was expanded.

One problem in increasing primary training and halving secondary capacity is how to maintain a sufficient secondary base for expansion by 1990. To achieve this would require maintaining capacity of some 6,100 secondary trained teachers in 1989/90 when demand is expected to be only 3,500.

One solution would be to explore how residual secondary capacity in the later 1980s can be used, as well as how many secondary teachers can be re-trained to work in the primary sector, the paper says.

In February the DES will be presenting a further paper to the sub-committee where it will be thrashed out before it goes to a main committee in March. It is not to make recommendations of the Secretary of State.



Treasury Minister Mr Barney Hayhoe speaks to students measuring breath in the physiology laboratory of the West London Institute of Higher Education. The Institute is in Mr Hayhoe's constituency of Hounslow, Brentford and Isleworth.

Youth service alternative

by Patricia Santinelli

A Manpower Services Commission task group is working on a plan to replace the controversial Youth Training Scheme announced by the Government only last December.

The group composed of representatives from the commission, the Confederation of British Industry and Trades Union Congress is to report on an alternative in April which it hopes to persuade the Government to accept instead of the YTS due to start in 1982.

The decision to investigate an alternative is a result of general opposition to the Government scheme which only partly matches the MSC's own proposed initiative.

There has been bitter criticism of proposals to pay 16 year olds on the one-year education, training and work experience scheme as little as £750 per annum, as well as making it compulsory by removing eligibility for supplementary benefits.

Members of the special programmes board which represent the FUC, CBI, education service and voluntary and youth organization are writing to the commission, following a meeting this week, at which they declared their opposition.

The alternative would bring the whole age group, whether unemployed, employed on Universal Vocation Preparation, or on Opportunities Programme, or on Young Workers schemes, under one umbrella on a permanent long term training scheme.

It would use the schemes' joint resources and would therefore be spending in excess of the £18m funding proposed by the Government.

Much depends on the final position of the CBI. But it is known that there is disquiet among employers at the prospect of taking on youngsters who will be dissatisfied from the moment they enter the scheme. The confederation is currently consulting its regional committees to assess their views.

A call to people working with unemployed young people to make their opposition to the YTS known to the Government is planned to pave the way for an alternative.

There is concern that the nature of the proposed YTS is threatening the Youth Opportunities Programme.

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Waldegrave promises poly redundancy fund

by John O'Leary and Charlotte Barry

A new local authority pool to cope with an estimated 4,000 lecturer redundancies and early retirement in colleges and polytechnics over the next two years will be established in April, Mr William Waldegrave, under-secretary for higher education said this week.

Mr Waldegrave told Mr Christopher Price, chairman of the Commons Select Committee on Education, in a letter accompanying details of next year's Advanced Further Education Pool allocation that regulations would be laid before Parliament in the near future.

Job losses could be increased in some polytechnics following a further announcement from the DES this week on this year's AFE pool.

North East London Polytechnic has been told it must lose 181-82 and just two months before the end of the financial year. Mr Gerry Fowler, NELP's director, said he had imposed an immediate block on new uncommitted spending.

The cut follows the pooling committee's recalculation of figures using unit costs submitted by the local authorities for 1978/79 and 1979/80. Although some polytechnics will lose out, others like Kingston, Coventry and Wolverhampton stand to gain from the revised allocation.

A note explaining the distribution of next year's pool says that funding disparity between colleges and polytechnics is the result of economies since 1979-80. The colleges made no savings last year, the DES claims, and will now have one year fewer in which to match the polytechnics' cuts.

In last week's THES, the percentage cuts for Ealing and Liverpool college allocations should have read 13.7 and 15 respectively, not 15 and 16.1. The percentage cut for Portsmouth Polytechnic is 4.7.

Dundee told to lose 33 academic jobs

by Olga Wojtas, Scottish Correspondent

Dundee University's court has been told that 22 academic and academic related posts must go, and the department of medical biophysics close with the loss of an additional 11 jobs.

Most of these will have to be achieved through redundancy, a special committee report warns, "unless alternative means of effecting the job losses can be quickly identified."

The court has decided that the report should now go to the senate and all university unions. A university spokesman said this week's discussions were ironic since simultaneous figures that undergraduate applications for next year have increased by 40 per cent.

Edinburgh University has launched an early retirement scheme with re-employment up to 90 per cent of their former salaries.

Dr John Burnett, the principal, told an emergency senate meeting that if a sizable number of the 250 staff eligible for the scheme took it up, it would make a "very significant contribution" to savings target.

The university's resources committee is currently considering a document from Edinburgh's Association of University Teachers claiming that savings could be achieved through natural wastage and realising assets including a tenth century Celtic manuscript, a twelfth century Persian manuscript, and various pieces of university land.

Scientists underspend on budget

by Olga Wojtas, Scottish Correspondent

Funds for university research and postgraduate training could fall short of targets set by the Science and Engineering Research Council, leaving it more than £600,000 underspent this year. As a result the council will this week consider using the money as a first instalment towards a new £1.9m IBM computer for its Rutherford and Appleton laboratory.

The major components of the shortfall, which follows last year's considerable overspending by the council, consist of cash surpluses in several areas. The two which most affect universities are a £335,000 shortfall in postgraduate training and £200,000 for university grants for astronomy, space and radio research.

Other underspending includes £111,000 for nuclear physics; £94,000 for science board spending; £60,000 for special centrally-funded schemes (such as energy conservation work); and £24,000 required for international subscriptions.

These surpluses are balanced by overspending of £221,000 on the council's central support facilities and £39,000 in administration. This leaves an underspend of £614,000.

This week the SERC was holding a full council meeting to discuss a proposal that the cash shortfall be made up as the first instalment towards the purchase of a new £1.9m 3081D IBM computer.

The new machine, which the SERC had planned to buy in subsequent years, will replace its two outdated 360/195 computers which provide calculation processing services for all the council's different divisions.

Underspending has always proved to be a problem for the SERC in a bid to counter this, the last council chairman, Sir Geoffrey Allen, deliberately overcommitted the SERC in backing projects in the expectation that normal programme slippage would result in budget balances at the end of the financial year. This did not happen, and the council found itself with almost £7m overspent last year.

An SERC spokesman said this year particular problems had arisen because the council wished to raise support grants for researchers from £300 to £400 but had not received Government permission in time.

However, some SERC officials suspect there are signs of increasing timidity among university researchers, affected by higher education cuts, in preparing and handing in research proposals and a close watch is to be kept on trends.

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Axe poised over 120 jobs at St Andrews

by Olga Wojtas, Scottish Correspondent

Fifty academic and 70 non academic posts must be axed and four departments closed if St Andrews University is to avoid a £1.8 million deficit, according to the university's restructuring committee.

The committee's proposals have still to go before court next Monday, but it is widely expected that they will be rubber-stamped and submitted to the University Grants Committee.

Dr James Lawrence of the university's Association of University Teachers has condemned the secrecy and timing of the report "this is a travesty of justice," he said. "The UGC letter came six and a half months ago, and now we've been given six days to discuss the proposals within the university. The committee met in such secrecy that we've simply been waiting for the black smoke to appear."

The AUT has prepared a document challenging the university's financial calculations, and claiming that the cuts can be achieved through natural wastage, which it is circulating immediately.

It has also criticized the senate for not implementing the recommendation of the arts faculty that cuts be applied across the board with no departments being closed. The arts faculty has been worst hit with 26

Open Tech courses set to start

by Charlotte Barry

The Open Tech programme will launch its first technical training and retraining courses for adults this autumn.

A task group from education and industry headed by the Rev Dr George Tolley, principal of Sheffield Polytechnic, will compile a programme of action and will report to the Manpower Services Commission by the summer.

The aim of the Open Tech is to harness existing facilities in further education colleges and the Open University with distance learning packages so students can study at home or at their place of work.

The programme could handle up to 50,000 technical students a year, would overcome constraints on class sizes and entry criteria and reduce the need to attend college at set times during the week.

The task group's first job will be to advise which colleges and distance learning agencies should cooperate and which parts of the country should host the pilot schemes.

It will also recommend how much the total venture and the central Open Tech Unit will cost to set up and develop. The original MSC consultative document published last June recommended the first three to five year phase should cost between £6m and £10m, but the Government now wants to accelerate this process by one year.

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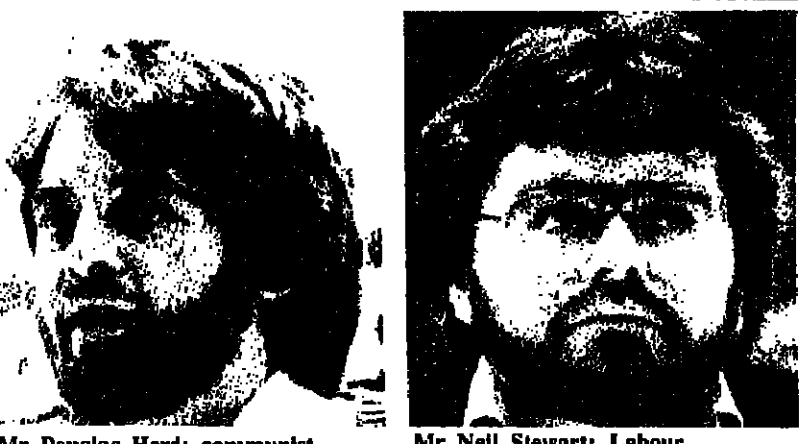
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Mr Douglas Herd: communist. Mr Neil Stewart: Labour

Social democrats back communist for president

by David Jobbins

Liberal and Social Democratic students have agreed to back a communist in this year's battle for leadership of the National Union of Students.

But the main challenge to the already-weakened Left Alliance influence on the executive is to come from the National Organisation of Labour Students. The new "alliance" reached by the Union of Liberal Students and a steering group for the Social Democratic Party is however to put up candidates for several other places on the executive.

The two groups have come to an agreement expected to be ratified by an SDP conference later next month on backing Mr Douglas Herd as Left Alliance candidate to replace fellow communist Mr David Aaronovitch as president.

His main challenger is to be Mr Neil Stewart, currently NUS (Scotland) chairperson, and a prominent member of the National Organisation of Labour Students.

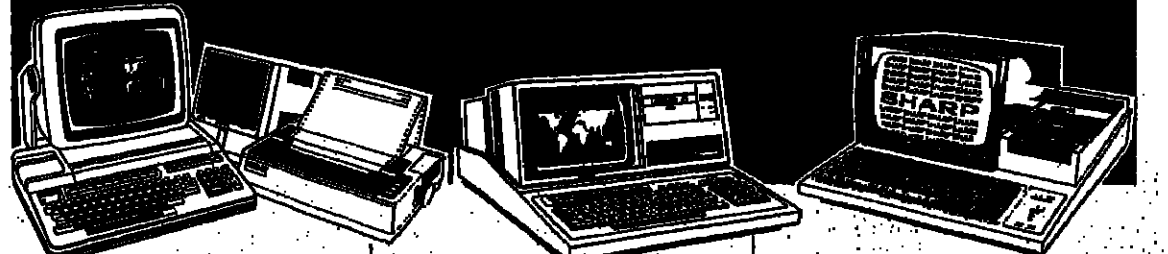
Despite SDP/Liberal support for Mr Herd, who is this year's national secretary, Mr Stewart is emerging as favourite in what promises to be a contest as close as last year. Then the NOLS candidate, Ms Helen Connor lost to Mr Aaronovitch by a mere 16 votes on the fifth transfer.

Mr Alan Watson is expected to face little or no difficulty in retaining the job of national treasurer for NOLS, which has decided not to oppose Ms Jane Taylor, the Left Alliance's choice for national secretary. The alliance is also putting up candidates for the two vice president places.

Nominations close on January 29, and despite the agreement between the Liberals and SDP, there are persistent suggestions that the new party would really like to test the water by standing for one of the full-time posts.

The virtual certainty is that NUS will continue its run of firsts with its first Scottish president. Mr Herd has been deputy president of NUS (Scotland). If Mr Stewart wrests the presidency from the alliance, the communist presence on the executive is likely to be cut to one.

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News in brief NUS demands say in safety

The National Union of Students has protested to the Health and Safety Commission at being excluded from a new committee set up to investigate potential hazards and safety measures in educational institutions.

President Mr David Aaronovitch this week called on the commission to allocate the students one of the three vacant seats on the education service advisory committee, which already has 24 members drawn from employers and trade unions.

The students union feels that its 1.2m members, the largest group involved in further and higher education, should have a direct voice. Committee chairman, Mr George Smith, indicated this week that NUS representatives would be co-opted on to sub-committees.

Scots campaign to rejoin union

St Andrews University this week began a campaign leading to a referendum early next month on reaffiliation to the National Union of Students.

Only three of Scotland's eight universities, Aberdeen, Stirling and Strathclyde, are still in the union. Most of the others, including St Andrews, left before the referendum on Scottish devolution when it seemed that the defunct Scottish Union of Students might be resurrected.

Engineering success

Application for National Engineering Scholarships in 1981 increased by 29 per cent and nearly 300 students gained awards, compared with 263 in 1980, 159 in 1979 and 62 in 1978. Of the 1981 successes only 44 were women, although this was more than all the previous years put together.

Students taking first degree engineering courses will receive £500 a year tax free in addition to mandatory student grants. Up to 300 scholarships will be available in September 1982 and the closing date is the end of the month.

Poly business

Three central London polytechnics are combining to start a part-time business studies degree for young people without formal qualifications.

The two evenings a week course will last between three and five years, and be based at South Bank in cooperation with Central and City of London polytechnics.

Provost named

Sir Zelman Cowen, governor-general of Australia, has been appointed Provost of Oriel College, Oxford, in succession to Lord Swynn, who resigned after one year.

Sir Zelman, aged 62, retired as governor-general in July. He was a fellow of Oriel in 1947 and was vice-chancellor of Queensland University.

Academic rewards

University salaries and further education teachers are in the top ten of salary surveys according to the organization of Labour Research. A table places university academics second only to medical practitioners with a 1981 salary of £25,900 a week, while public sector staff are seventh behind personnel managers, company secretaries, police inspectors and finance and tax specialists with £20,750.

TEC chief retires

Mr Patrick Harriot, chief officer of the Technical Education Council is to retire in August. Mr Harriot was appointed in May 1973 when TEC was created.

TV stars

Oxford, Cambridge, Manchester and Sussex universities are to take part in a television series on European universities. Filming began at Cambridge last week of the series which will be shown on the BBC. The series will be a special feature of the relationship between universities and government, and the importance of postgraduate work.

CNAA asks critics to help it improve

by Charlotte Barry

The work and future role of the Council for National Academic Awards is being scrutinized by a special working party. The team headed by CNAA chief officer Dr Edwin Kerr, will report back to the council in June. At the same time the CNAA has asked interested parties to send in their views on the way the council could improve. These will be incorporated into a discussion paper containing detailed proposals which will be published later this year.

The working party on longer term development will start by identifying the council's most valuable activities and relationships with courses and institutions which should be preserved. This will be related to the changes which have taken place within colleges and polytechnics over the last few years, particularly their growing responsibility in the process of validation. The working party will also connect this to immediate developments in the higher education sector including plans for a national body,

changes in course structure and the needs of part-time students. The council decided to set up the working party in the aftermath of its scheme for Partnership in Validation, intended to give polytechnics and colleges more control over course structure.

It will meet twice a term and will start by looking at activities it considers worth preserving, such as the system of peer group evaluation. It will then start to scrutinize some of its drawbacks, including the complaints received from

institutions about the amount of paper work demanded. The council has told the working party that it should not feel constrained about questioning aspects of CNAA's role which could lead to major changes in its charter and status. Dr Kerr said: "We would be prepared to look at quite radical alternatives but would have to recognize that if we tried to do that it is not entirely in our hands because changes to the charter and status do require approval from the Privy Council."

Salford University Industrial Centre Ltd



Praise for Salford's industry

Mrs Thatcher said last week she was very impressed with Salford University, particularly the way it had responded to cuts in funding.

The prime minister, who formally opened the Salford University Industrial Centre said: "May I express my faith in the future of Salford University and in the work it is doing in such close contact with industry. May I say I will faithfully report it to the appropriate quarters."

She said she had noted previously that Salford was already concerned to develop the new needs of industry but had only just appreciated exactly what the university was doing not to just keep abreast, but to be always one

step ahead. "Perhaps out of this very difficult time there may come a much closer cooperation between industry and the university than we have ever seen before", she said.

The industrial centre was financed by £250,000 from the City of Salford under an urban partnership scheme. It provides for the close collaboration between academics and industrialists in engineering development and product design. Mrs Thatcher toured the centre's workshop. She was presented with a brochure by the vice-chancellor, Professor John Ashworth, and then visited the nearby science park.

Short-term jobs unfilled

Key teaching posts at Leeds Polytechnic cannot be filled because they have been released by the local education authority on condition that only five terms' tenure should be offered.

The authority agreed to release 21 posts but five nevertheless remain unfilled. One is for a course supervisor with a community nursing certificate and teaching staff say that the chances of a suitably qualified applicant for a temporary post are minimal.

The polytechnic's personnel committee has appealed to the education authority to fulfil the posts on a

permanent footing, and senior administrators are hopeful that it will agree. Uncertainties about the pool allocation and the overall financial circumstances mean that the authority did not want to add to its difficulties by giving staff tenure in the first instance. But it has assured the polytechnic that if difficulties were experienced the authority was prepared to reconsider the possibility of permanent posts.

Deputy director for personnel Mr John Evans said: "It seems to us that the nature of the tasks are such that people will not move from full-time posts to ones of a temporary nature to take on these responsibilities."

Sir Keith's threat to 16-plus exam provokes concern

Examination chiefs warned the Secretary of State for Education this week that serious educational problems would result if a new single examination at 16 plus was not set.

The warning came at a conference held by representatives of the joint schools of the 16 plus National Curriculum, the organization of GCE and CSE, and the organization of O-levels. The new exam is to give a second progress report on work undertaken to

that Sir Keith Joseph is considering scrapping the proposed single exam for 16-year-olds. It is still waiting for the Secretary of State to confirm that it will be introduced in 1987.

In addition the Council has had to postpone submitting final versions of its criteria proposals to the Department of Education and Science, originally due in July, until the end of the year.

The decision was taken after reviewing the progress of consultation on the first stage when five draft reports were

circulated. The council now believes that to go ahead faster would seriously prejudice the consultation process and leave insufficient time to review comments and carry out necessary amendments.

It has now asked colleges, schools, local authorities and national bodies to make their response on the 16 plus giving draft proposals for 14 reports, national criteria in 20 different subjects now being circulated, in April at the earliest.

Sheffield is proposing to reorganize

Younger refuses to listen

by Olga Wojtas
Scottish Correspondent

The Scottish Council of the British Medical Association has written to Scottish Secretary Mr George Younger warning that cuts in university medical faculties will not only have a serious effect on patient care, but threaten teaching, research and medical specialization.

But Mr Younger has refused the council's request for a meeting to discuss the implications for medicine in Scotland, and instead a BMA delegation, headed by the Scottish Chairman Dr Sam McKechnie, will meet Scottish Health Minister Mr Allan Stewart at the beginning of February.

"We're very disappointed that Mr Younger is not able to meet us," said Dr Derek Buchanan, the BMA's Scottish Secretary. "But at least we're seeing the second in command, although Mr Stewart has no responsibility."

Dr Buchanan's letter to Mr Younger points out that Scottish clinical medicine departments provide a significant higher proportion of national health patient care than south of the border, and medicine must continue to be protected because of its high degree of

service commitment. Scottish medical faculties are not only the least able to sustain teaching cuts because of this, but are the most vulnerable.

Dr Buchanan continues: "Clinical medicine has a very high turnover and present university policy of freezing posts will mean medical faculties suffering more than others. "We have no control over the number of medical students who matriculate," Dr Buchanan told THE TIMES. "The Government has not reduced the number of almost 4,000 students a year, but if one cuts down on professors and lecturers, the standard of teaching must inevitably be reduced."

"The Scottish Secretary has written to health boards asking them to identify posts they will pick up, but we are concerned that they will not cover all the posts that are going to be lost, particularly in medical education. Many of the doctors in university departments are working to become specialists in their own fields and that may be threatened."

There is the further anomaly, says Dr Buchanan, that the National Health Service is said to have a growth rate of 1.5 per cent, while the universities are to be cut by 15 per cent.

all post-compulsory education, but that in the polytechnic, into a unified system of tertiary colleges, following recommendations made to the education committee this week.

"A working party is now to be set up to work out a detailed plan. This could be implemented by 1985 and would cost some £2m over 10 years. An estimated seven to eight tertiary colleges could take over the work currently being undertaken by five colleges of further education and 37 sixth forms in secondary schools."

Polish scientists receive support

by Robin McKie
Science Correspondent

Two of Britain's most prestigious academic bodies, the Royal Society and the British Academy, have sent a message of support to their sister organization, the Polish Academy of Science.

The letter, signed by respective presidents Sir Andrew Huxley and Professor Owen Chadwick, states that the two institutions "deeply regret the interruption of normal relationships between the communities of scholars in Britain and Poland and trust that they will soon be resumed."

The mildly worded message compares with a far more forcible letter signed by 5,000 French academics which was published in *Le Monde* this week. This openly condemns the military takeover in Poland, not only because of the situation it has created within its borders but because of its effects on the general rights of all people.

The signatories demand that French and international relations of help to the new Polish authorities should be suspended until liberties are restored there and that Western intellectuals and academics should withdraw all collaboration with relevant organizations. They conclude

their letter with an appeal for cash to help them promote their campaign.

This approach contrasts with the more carefully written letter from the Royal Society and the British Academy. It simply states that the two organizations "in accordance with strongly expressed wishes of fellows, send to the Polish Academy of Sciences warmest wishes of sympathy and support in its task of upholding the values of learning and scholarship which constitute the ideals of our several bodies."

It adds that in the "spirit of friendship, confident, equal and free association which animated the foundation of the International Academic Union and the International Council of Scientific Unions, of which the British groups and the Polish Academy are members, copies of the letter are to be circulated to both these international organizations."

This deliberately restrained message has been chosen because both the society and the academy believe it will provide maximum support for the Polish academy while not alienating authorities there by attacking the military regime. In this way, the institutions believe it may be easier for Polish academics to use the letter to support arguments for the restoration of improved academic conditions in the country.

CDP's 'dangerous cant' comes under attack

by Charlotte Barry

Oxford Polytechnic's head of humanities has accused the Committee of Directors of Polytechnics of spreading "dangerous cant" about the importance of vocational courses.

Dr Robert Murray's attack on the committee came in his department's official response to the polytechnic's draft development plan for 1982-87. He said the plan was influenced by "propaganda" in the form of CDP publicity leaflets suggesting that vocational courses constitute the distinguishing feature of polytechnics.

Dr Murray was reacting to a section of the draft plan drawn up by polytechnic director Dr Brian Tonge which singled out his humanities department for not being wholly applied or vocational.

The humanities department response said: "The CDP propaganda about vocationally relevant courses supposedly being the distinguishing feature of the polytechnics is cant and dangerous cant. Anyone who questions our place in the polytechnics is an enemy of critical reason and the handmaiden of mindless robots."

Southampton drops degree

Southampton University is to award no honorary degrees this year as a public protest against Government policy towards universities; and to underline the serious situation in which it is placed.

The university normally awards around five honorary degrees. It had not got as far as drawing up a list of names for this year. It has also decided not to hold a public graduation ceremony in April 1982, as it normally does, but the July ceremonies will continue.

Professor John Roberts, the vice-chancellor, told the university court that he hoped the decision would "bring to public attention our deep distaste for and disapproval of the foolish and ill-considered policies we are now being asked to carry out."

"We have very few means of signalling our feelings about these matters to a large public, but to forego our customary public acknowledgment of the achievements and support of distinguished men and women may at least make the point that this is not a moment when British universities have much to rejoice about."



Late for work. This large wooden figure, clutching razor, shoe brush and shaving brush, is the sculpture out of the director's special fund. Dr Nuttgens said: "It is a stunning piece of sculpture and it looks jolly good in the concourse."

Dr Patrick Nuttgens, director of Leeds Polytechnic, heard of Mike's plight and bought the sculpture out of the director's special fund. Dr Nuttgens said: "It is a stunning piece of sculpture and it looks jolly good in the concourse."

Sussex sells residence for £250,000

by Ngalo Crequer

Sussex University has sold its vice-chancellor's residence for £250,000, to a local businessman.

Proceeds of the sale will go towards the university's appeal fund, and a small proportion will go to another property, Swanborough Manor, for possible conversion to a vice-chancellor's residence at a later stage. The manor is owned by the university and is currently divided into flats for leased accommodation.

The vice-chancellor, Sir Denis Wilkinson, had asked to be released from the university obligation to live in the official residence, Ashcombe House. The Georgian country house, a listed building, is set in 26 acres besides a main house, stable, separate three-bedroomed cottage, stable, paddocks and tennis court. It is set in the Downs, half way between the university and Lewes.

He preferred to live in his own private house in the country. The university agreed and decided to sell Ashcombe House.

Accountants aim to make their courses add up better

A new central examination aimed at foundation accountancy students, particularly those on graduate conversion courses, is being considered by the Institute of Chartered Accountants in England and Wales.

In its first major policy document on education and training since 1972, the institute says such an examination would end the duplication of effort in setting and marking examinations, and would improve the consistency of subject courses and standards.

Such an examination could be undertaken by an educational establishment and a new certificate of accounting studies would be awarded.

However the ICA does not plan to take over the running of foundation education and says it will continue simply to accredit suitable courses in both the public and private sectors.

In spite of concern that courses undertaken by non-graduate graduates (those without accountancy degrees) and non-graduates are too short, it does not intend to recommend any substantial changes at the moment.

It believes that for non-graduates an extension beyond the current academic one year would be impracticable because of cost. It concedes however that this might have to be reviewed eventually if there is an increase in the basic knowledge required.

The institute is planning to encourage the further development and quality of academic accountancy. It believes the excellence and status of academic accountancy could be promoted by, for example, post-graduate research work, improved links between academic accountants and those in accountancy elsewhere.

It will also seek to ensure that the efforts of those involved in foundation education, professional education and training are coordinated and based on similar yardsticks of quality. A particular aspect of this task will be to ensure that foundation education leads naturally and effectively into a training period.

Education and Training - a Policy Framework. Free from the Institute of Chartered Accountants in England and Wales, Moorgate Place, London EC2.

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North American news

University racial policy storm grows

from Peter David

WASHINGTON

A small Christian university in South Carolina last week found itself at the centre of a sudden political storm which has shaken the Reagan administration and forced the President into an embarrassing U-turn.
Bob Jones University is a private fundamentalist university which has occasionally received public attention for its claim to find biblical justification for a policy forbidding black and white students to date each other.
For several years it has been locked in litigation with the United States Justice Department, which stripped the university of its charitable tax-exempt status under a 12-year-old government rule denying charitable status to schools and colleges practising discrimination.
But a bizarre sequence of policy shifts by President Reagan last week overturned a pending Supreme Court hearing and provoked bitter confrontation between the administration and black civil rights groups.
The episode began with an unheralded announcement by the justice department officials that the president had decided to reverse the policy of denying charitable status to private institutions practising discrimination.
Claiming that the policy had surrendered too much political power to the internal revenue service, the administration notified the supreme court that the Bob Jones case and similar litigation with a group of private schools in North Carolina would be dropped.
The announcement unleashed so much public criticism, however, that the president was forced to issue a personal statement four days later saying that the action had been "misunderstood" and promising to enact legislation restoring the status quo.
"I am unalterably opposed to racial discrimination in any form. I would not knowingly contribute to any organization that supports racial discrimination. My record and the

record of this administration are clear on this point," he said.
"I am also opposed to administrative agencies exercising powers that the constitution assigns to Congress. Such agencies, no matter how well intentioned, cannot be allowed to govern by administrative fiat.
That was the sole basis of the decision announced by the treasury department last Friday. I regret there has been a misunderstanding of the purpose of the decision."
The conciliatory tone of the president's statement failed to soothe the infuriated civil rights groups, however. They pointed out that until Congress legislates to reinstate the original policy, the president's decision means schools which openly practise discrimination may receive tax-exempt status.
Nor do the groups accept the president's explanation that his policy had been "misunderstood". Spokesmen for the National Association for the Advancement of Coloured People and the Lawyers Committee for Civil Rights Under Law said President Reagan had simply tripped up in his haste to weaken the government's hand in opposing discrimination.
Mr Norman Chachkin, an attorney for the lawyers committee, said the move had revealed the true colours of the administration. "This administration does not believe it should bother with racial discrimination," he said.
Both the lawyers committee and the NAACP are now taking the issue to the courts, hoping to force the government to restore the policy without having to enact new and time-consuming legislation.
Meanwhile the administration appears to have been surprised by the strength of public reaction. Both The Washington Post and The New York Times strongly condemned the president's action.
The latter accused the administration of "picking the pocket of every American taxpayer to subsidize racism in education."

Pentagon to fund science research

by our North American editor

The Pentagon is expected to respond positively to a request by the universities to increase its stake in academic research and mend the breach with campuses that opened during the Vietnam war.
A joint defence department and university panel has been meeting since last spring to draw up a concordat between higher education and the nation's military establishment. Its report, now in draft form, will be presented to Congress next month to guide the 1983 budget debate.
Dr Ivan Bennett, the New York University professor who has been chairing the panel, said last week that it intended to adopt most of the recommendations put forward by the Association of American Universities (THES December 11, 1981).
These included a big increase in defence department sponsorship of academic science and the creation of a permanent liaison office.
Dr Bennett said the report to Congress would say that Pentagon funding of university research had begun to increase, but would recommend "additional and sustained" increases to make less obsolete the research instrumentation in major institutions.
It would accept the universities' suggestion of a permanent liaison office and specify which department in the Pentagon should assume responsibility. In addition, the report would propose better coordination between the various government departments which had relations with the universities.
Dr Bennett's panel was established last year at the instigation of the House armed services committee after a number of university presidents called for Pentagon help to overcome the shortage of skilled manpower.
But in recent months the panel has turned much of its attention to the growing friction between academic researchers and the government over the extent to which America's scientific secrets should be guarded from foreign schools.
This argument reached a peak three weeks ago when Admiral Robert Inman, Deputy Director of the Central Intelligence Agency, told university researchers at the Association for the Advancement of Science in Washington they should consider submitting their work for prepublication screening to keep ideas with military applications out of the hands of potential adversaries.

Competitors close the technology gap

by our North American editor

The "technology gap" between the United States and other industrialized nations is narrowing, the National Science Board told President Reagan in its annual review of scientific trends.
In a survey of international spending policies on research and development, the board says that the US still spends more than any country other than the Soviet Union. But other countries, particularly Japan and West Germany, had greatly increased their technological capacity.
Additionally, a substantial proportion of the US population may not have as solid a scientific and technical background as their counterparts in Japan, West Germany and the Soviet Union because these countries have stressed science and mathematics literacy in their secondary schools to a greater degree and for a larger cross-section of students.
"However, at higher education levels, US graduates in science and technology fields are believed to receive more flexible and broad-based theoretical education than their Soviet counterparts."
The analysis, published in Science Indicators, points out that there are big differences between America and its main competitors in the distribution of research funds.
While more than half of American funding came from public sources, West German and Japanese research received most of its funds from industry. In the US, half the government contribution went to defence and space projects, while Japanese and West German funds were concentrated in areas related to economic growth.
The report suggests these differences could help explain the slower rate of economic growth in the US. They were reinforced by evidence of less patenting activity by American inventors and more patenting activities by foreigners in the United States.
Studies of scientific publication in academic journals, however, showed a continuing American lead. American scientists accounted for about 37 per cent of the world's scientific literature between 1973 and 1979, and their share of work in biomedicine showed a substantial increase.
The 368-page report is the fifth in a series of detailed studies carried out for the government and covering all areas of the nation's science and technology effort.
Other findings in the study included:
● Basic research activity had increased continually since the 1970s with universities accounting for about half of the total. Last year colleges were expected to be conducting about 13 per cent more basic research than they did in 1975, measured in constant dollars.
● There was growing concern that research resources were being drained by the need for scientists to devote more administrative energy to accounting for their use of public funds. Between 10 and 30 per cent of a scientist's typical working week could be consumed in this way.
● Cooperation between industry and university researchers, as measured by joint publications were 33 and 32 per cent respectively.
● The public's overall view of science and technology was highly favourable with 70 per cent of Americans believing that its benefits outweighed its harmful effects. But more than half the population is worried that science is changing too quickly the way people live.



Japan: catching up fast

Overseas news

Banks agree to student loan scheme

from Geoff Maslen

MELBOURNE

Australian trading banks have agreed under pressure from the federal government to lend up to A\$500 (£87.5m) a year to tertiary students as part of Canberra's proposed student loan scheme.
It has taken the government nine months to persuade the banks to agree to its student loan proposal but the banks are still arguing that the lending maximum should be A\$25m (£4.75m) and the government is still unable to say when the scheme will begin.
It has already been forced to abandon its target of having the scheme operating from the beginning of this year. The Treasurer, Mr Howard, has said some details have still to be negotiated.
The federal Labour opposition has said that despite the agreement with the banks, it would try to block legislation until a Senate committee had looked at the whole question of finance for tertiary students.
When the student loan proposal was first mooted last April the government said the scheme would enable students to supplement their income by amounts to be repayable after graduation. The intention was to substitute loans for increases in the present tertiary education allowances the government makes available to a minority of students who can demonstrate need.
The banks have told the government that they consider a maximum individual loan of A\$2,000 (£350), with a minimum of A\$500 (£87.5), with any one year as a reasonable level, although the ability of students to repay accumulated loans would influence the amount.
The banks expect a high default rate and they want the government to assume direct responsibility for any loans which fall three months in arrears.
The banks have said that a A\$500 (£87.5m) scheme could seriously impair their ability to meet demands from the community. It would also be unrealistic to charge less than the maximum interest rate for loans now at A\$100,000 (£175,000 - now 13.5 per cent) because of the high administrative costs.
Academics, students and the Labour Party say the scheme would not improve access to tertiary education.

not improve access to tertiary education.

Sydney universities were considering rejoining and MacQuarie was committed to doing so by the end of this year.

In part, a campaign by the AUS opposing federal funding cuts has helped re-establish the credibility of the union with previously disaffected student groups.

This good news has been counteracted by the likely loss to the AUS of \$100,000 (£175,000) a year as a result of new Victorian legislation restricting the payment of student union fees.

Moslem clash closes campus

from Benny Morris

JERUSALEM

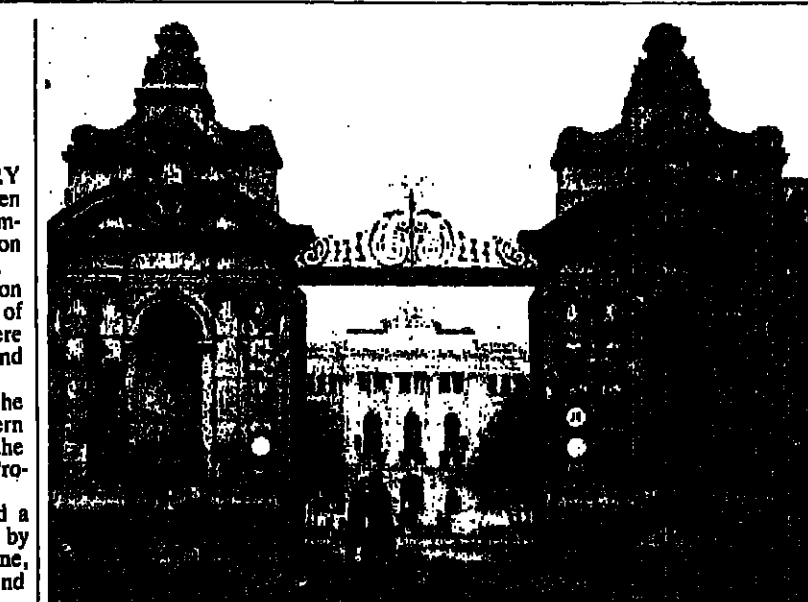
Nabius' El-Najah University in the Israeli occupied West Bank was closed indefinitely this week following a weekend of violent clashes between extreme nationalist and Moslem fundamentalist student factions.
Eighteen students were injured in the clash and one lecturer fell from the third floor of the university building.
The board of governors has expelled 51 students and has dismissed the members of the Moslem council.
Fundamentalist Moslem students, connected with the extremist Moslem Brotherhood, published a statement hinting that left-wing pro-Palestine Liberation Organization students had been responsible for the violence.
The heads of Bir Zeit University near Ramallah and Bethlehem University have expressed the fear that the nationalist-fundamentalist student clashes will spill over into their campuses.
The Al-Najah student body is dominated by Islamic fundamentalists while in the bulk of the West Bank, including Bir Zeit University, pro-PLO sympathies hold sway.
The clashes, in the most recent of which two students were stabbed, date back to the surprise victory last summer in the student council elections of Islamic fundamentalists connected with the extremist Moslem Brotherhood.

Inquiry into poor results

from Stephen Taylor

SALISBURY

A commission of inquiry has been appointed at the University of Zimbabwe to look into poor examination results for the last academic year.
Not all results are known but on one first-year course only 38 out of 86 students passed. Another 17 were allowed to write supplementaries and 31 had to repeat.
"When I received reports of the results I indicated my grave concern about the high failure rate in the university," the vice chancellor, Professor Walter Kamba, said.
Professor Kamba has appointed a four-man commission, chaired by vice principal Dr P. Makhurane, which will be inviting students and staff to submit material.
Mr Clifford Mashiri, the president of the students' representative council, said the results had been affected by an incidence of food poisoning. Almost 90 per cent of the students at the main Manfred Hodson hall of residence had suffered stomach complaints before and during the examinations, he said.
Six students had been taken to hospital and many others had to be escorted to the lavatory while writing papers. A question still hangs over the future of many of the students who have to repeat a year of study.
They receive government grants which are not available for repeat years.



Warsaw University: open again.

Military lays down rules for Polish universities

Polish universities should be back at work by mid-February, according to a communique from the ruling Military Council of National Salvation, but all student organizations and self-management bodies will remain suspended, and principals are instructed to cut their establishments.
Students will be obliged to work harder ostensibly to compensate for time lost by the student strike last term, and by the prolonged winter vacation necessitated by the introduction of martial law. If necessary the final year may be prolonged by one term to make up arrears.
University senates and faculty councils, which, it was promised last February, would have greater independence, will be reduced to the status of advisory organs.
Resumption of studies will be dependent on strict observance of the provisions of martial law, including the holding of special courses in the first few days after the university opens, explaining the demands of martial law, and the meaning of the new oath of loyalty.
Principals will be expected to maintain increased control over student hostels and to "protect the territory of their establishment." This includes banning employees and students from campus outside working hours.
All students must attend courses in two foreign languages, one of which must be a language already studied in secondary school. In practice this means a return to compulsory Russian, thus negating one of the concessions granted in the Lodz Accord signed at the end of the student strike last February.
The attendance of students at all lecture courses and other academic activities is obligatory: absence involves the threat of sanctions to be imposed by the dean.
Students may also be expelled for infringement of martial law regulations on union activities.
Principals may make it incumbent "in justified cases" upon students to undertake "socially useful work". This apparently is intended as a minor punishment for infringement of the above regulations.
The establishment of a new course of studies or special subject at a university will require the consent of the Ministry of Science, Higher Education and Technology. This is a direct reversal of the spirit of the Lodz Accord.
Deans may grant students short or long-term leave for the duration of basic military service. This appears to be a device for imposing national service on students who would otherwise be exempt.
The regulations do not explain who will act in the absence of student self-management organizations. These groups were set up to coordinate the work of the "old" Union of Polish Socialist Students and the (now proscribed) Independent Students Association on various welfare and personal matters. Nor do they explain what will happen in universities where the principal or rector is interned. The latest list reaching Amnesty International includes the names of Henryk Samsonowicz, rector of Warsaw University, and Josef Gierowski, the rector of Cracow University, among those who are detained.

Black activist banned

from Craig Charney

JOHANNESBURG

The chairman of the black students society at the University of the Witwatersrand (Wits), Mr David Johnson, was banned on January 11.
This followed the detention of Mr Ralph Wortley, a psychologist who heads the university careers counselling unit, and three others on January 8 in the latest of a series of security police swoops. Eleven other students, former student leaders, and Wits staffers are in detention.
Mr Johnson, a social work student, had played a key role in the rapprochement between black and white activists at Wits, and in last year's anti-apartheid protests, he had also become an increasingly respected and popular speaker in the black community at large.
Condemning the ban, Mr Jeremy Clarke, chairman of the Wits students representatives council, said: "We have worked with David for a couple of years now. He has made a tremendous contribution to campus life and to the political development of many people.
Mr Johnson is the third black student leader at Wits to be banned within a year, following Mr Firoz Cachalia and Mr Azhar Cachalia last July.
"They've removed the first tier of leadership in the black students society, which is very serious for campus activity in the next year," Mr Clarke said. "The figures who remain unrestricted are less knowledgeable and experienced.
Mr Johnson has been detained without trial twice since 1980. Now he is forbidden, for five years, to address political meetings, write for publication, or be quoted. The order also restricts him to Vereeniging, where his parents live, and Johannesburg, where he studies, but will let him complete his degree under a law which provides for renewable two-week periods of detention. Wits deputy vice chancellor Professor P. D. Tyson called the authorities action "arbitrary" and demanded that they charge or release him.

Candidates risk health to study

by John Gardner

Chinese education officials are worried about the poor health of students applying for university places. According to Wen Hui Po, a Hong Kong newspaper, it was reported recently that 57 per cent of intending students failed to pass the compulsory medical examination in 1981.
A major reason for this is overwork caused by the massive increase in the number of potential candidates. Jiang Nanxiang, the minister of education, has pointed out that the number of senior middle school graduates rose by 1,800 per cent between 1965 and 1980, but the annual student intake by universities rose by only 75 per cent. In 1980 6,100,000 students graduated from senior middle school but only 281,000 university places were available.
The minister blamed this unbalanced development on the Cultural Revolution of 1966-76 when a policy of dramatically increasing secondary school places was in effect, paid for by reducing the length of a full primary and secondary education.
Now that high academic standards are again being applied, the luckless students have to compensate for their reduced schooling by working extremely long hours in the hope of joining the 4 or 5 per cent who can obtain a university place.
Apart from promising to spend more money, the minister intends to relieve pressure by transforming most senior middle schools into vocational institutions.

Reagan threatens to close Department of Education

Defenders of the two-year-old Department of Education, which President Reagan has promised to close, have launched a winter offensive designed to win support in Congress.
A grand coalition of nearly a hundred educational and cultural associations is writing to senators and public figures arguing that the department - established by President Carter - has done a good job and should be saved.
Since coming to power President Reagan has repeated his belief that the department should be closed to save money and to ensure that individual states, not the federal government, assume prime responsibility for education.
But the administration has not decided what to do with the department's functions once it is disbanded. Republican hawks want them distributed among other government ministries, but the education secretary, Mr Terrell Bell, favours keeping many of the functions together under a demoted agency or foundation.
In a letter to senators, the coalition says neither option should be accepted. It continues: "We believe this initiative is part of a larger effort to reverse the federal government's historic support for education.
"Sharp budget cuts in successful education programmes coupled with an effort to abolish the department which spends for the educational needs of millions of parents, for the students, and administrators at the national level - would, if enacted, represent an abrupt reversal of the federal government's historic support of education."
The coalition argues that under the department's leadership, it dispersed

Canada needs more engineers

Canada, like the United States, expects a serious shortage of engineers in the 1980s, according to a new report from the Ministry of Science and Technology.
The report warns that the high industrial demand for engineers in the 1980s will exceed the domestic supply and exacerbate the existing shortage of engineering staff in universities.
Excellent industrial salaries and the decline in university pay already mean there are 200 empty engineering posts in Canadian universities, the study says.
"Two programmes set up by the government's Natural Sciences and Engineering Research Council have been set up - one to persuade undergraduate engineers to stay on for graduate study; the other to finance full-time research posts at universities or in industry.
The report also says that some industries, with their own pressing needs for qualified researchers, have begun to help universities by supporting cooperative postgraduate programmes and funding research chairs.
But neither these efforts, nor the government-funded bursary programmes, are expected to compensate for an estimated 40 per cent shortfall in the number of engineers required.
In the past, immigration has been an important balancing element. However, other countries are experiencing shortages in the skills which are in high demand in Canada, and it will become increasingly difficult to rely on immigration as a ready solution to the skill shortages," the study warns.
As if to drive that message home, the United States National Science Foundation released a report this month drawing attention to the extent to which foreign students had become a major element in America's postgraduate science and engineering.
It said the number of foreign postgraduates in those disciplines had increased by 41 per cent in the five years between 1974 and 1979, while American citizens in the same disciplines increased by only nine per cent.
In 1979, the report said, foreigners received nearly half the doctorates granted in engineering and over a quarter of those in mathematical and computer sciences.
Depending on their readiness to remain in the U.S. and find employment, foreign students could represent a sixth of the nation's doctoral engineering labour force by 1990; the report estimated.

Harvard Mallinckrodt bequest now worth \$77m.

Harvard University announced last week that a bequest by one of its graduates 15 years ago was now worth \$77m.
Mr Edward Mallinckrodt left the university 1,300,000 shares in his chemical and health care company. The same bequest yielded nearly a million shares to Washington University in St. Louis.
The trust from which Harvard has reaped an annual income of \$7,500,000 a year is to be dissolved this month following a merger between Mallinckrodt and Avon.

West Germans feel the pinch

Nearly 80 per cent of West Germans who graduated in the past ten years have found "appropriate" jobs, according to the Federal Employment Office, and most of the rest, it says, are in "adequate" employment.
But the office warns that a continuation of the recession and high unemployment are bound to have an adverse effect on career prospects for university leavers in the 1980s, and could force many to accept jobs which are below their abilities.
Some 1.45m Germans now in employment have university degrees, and 68 per cent of them have jobs with good prospects in the civil service, the health services and in church organizations. About five per cent are classed as self-employed - for instance doctors, dentists, lawyers and tax consultants.

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Britain's beleaguered social scientists may find some solace in the experience of their transatlantic colleagues. Paul Flather on the problems faced by the SSRC and Peter David on how the Americans have solved them.



Characters in the SSRC drama - Howe, Posner, Rothschild and Joseph.

Conspiracies and counterplots

There are now unmistakable signs that the social sciences in Britain are facing their gravest crisis. Not only has the University Grants Committee invited some 25 universities to make significant cuts in their social science departments, but the future of the Social Science Research Council looks very uncertain.

Speculation about the well-being of social sciences has been rife ever since Thatcher won the 1979 General Election. An immediate extra cut of £1,500,000 was imposed on the SSRC, but only with the arrival of Sir Keith Joseph as Secretary of State for Education, have matters really come to a head.

First Joseph summoned SSRC Chairman Mr Michael Posner to Elizabeth House and openly with-out any preliminary briefing told him that he was going to lose a further £1,100,000 of his 1982-83 budget, originally projected on the basis of level funding. The money was to be redistributed among the other research councils.

It has subsequently emerged that Joseph had in fact wanted a cut of up to £2m, but was, it is said, knocked down to an overall cut of between £1m and £1,250,000.

With that hardly settled, Mr Posner asked for an audience with Joseph to discuss the benefits social science research was bringing to "improve the efficiency of the national economy and the quality of life," to paraphrase the Heyworth Committee report of 1965 which led to the setting up of the SSRC. Instead, in another brief audience, he was told that a review of SSRC activities was to be carried out as soon as possible by Lord Rothschild.

The official terms of reference were for Lord Rothschild to advise the Government on what areas of SSRC work should be done at the taxpayer's expense and what at the customer's; which areas could be done as cheaply by other bodies; and which areas directly funded by the Government could be better done by the SSRC. This last clause was added on the SSRC's initiative, and refers to current talks about transferring research from the Government to the SSRC.

What are social scientists to make of all this, and how are they to respond? Opinion is divided between those who believe Joseph arrived with preconceived plans to knife the SSRC, the conspiracy theory; and those who believe he has been sidetracked into a review which will probably give the SSRC a lifeline, the Yes, Minister theory.

bridge economist, is himself a leading member of the Clare Group of neo-Keynesians.

The conspiracy theory was fuelled by the recent leaking of private Cabinet letters between Joseph and Sir Geoffrey Howe, the Chancellor of the Exchequer. Joseph wrote of Lord Rothschild as "a tried and respected operator", and enlarging on the review's aims said Lord Rothschild would have to examine in the light of recommended changes whether "there would be a continued justification for the council's existence."

Howe responds, saying he and his Treasury colleagues had already expressed doubts about the value of some of the SSRC's work - which could again refer to the apparent Keynesian bent of the SSRC. Howe goes on to support the switching of funds out of social sciences into the natural sciences.

Clearly the significance of the letters must not be exaggerated. But they appear to have acted as a catalyst on social scientists to begin defending their subject areas in the face of "philistine and sinister attacks". SSRC staff report a significant increase in messages and letters of support.

Ironically, many social scientists believe the review offers the best hope of salvation: Joseph was talked out of a quick kill by senior DES civil servants and Mr William Waldegrave, under secretary for higher education, and scuttled on the man who in 1971 produced a report on the merits of customer and contractor research.

But Lord Rothschild is his own man, and when he reports probably in early May, it is just as likely he will disappoint his sponsors. It is interesting that both Posner and Waldegrave have worked closely with Lord Rothschild before, when he headed the Government's Central Policy Review Staff.

Lord Rothschild is still abroad on business and is not expected to begin work in earnest for another week or so. But social scientists are beginning to prepare themselves for a long year defending their subjects.

Professor John Eldridge, professor of sociology at Glasgow University, is one of the driving forces behind moves to set up a new Association of Learned Societies representing the social sciences, due to be launched in February. A working party report has met with widespread support, and Eldridge is well aware that the association could become an important platform to defend social sciences and the SSRC.

Mr Malcolm Cross, research officer of the SSRC's ethnic relations unit, who has just stepped down as chairman of the Social Research Association, is producing his own review of the state of social research, in the light of all recent Government legislation. He believes there is a strong need to collect international data to show just how much is spent on social research in comparable Western nations. In France, for example, the science budget has just been increased by 30 per cent all round.

The Social Science Action Committee, an ad hoc pressure group set up last year by some 14 senior social scientists, is planning a meeting before the end of the month to make clear its reaction. Professor Margaret Stacey, professor of sociology at BSA chairman, committee convenor and BSA secretary, says the committee's motivations appear philanthropic.

And the SSRC is bracing itself for the business of the next Government. It has already been called on to supply detailed information at short notice to Lord Rothschild and there will be much more work ahead. Even if it wanted to, it could not second a full-time staff member to run a lobby office in London as was done in Washington. But it is monitoring the extent to which the social science research base is being undermined in universities. This week council members have been attending a two-day summit meeting to discuss the SSRC's position.

Many senior academics are quite happy to sit on the Rothschild review. They can expect Lord Rothschild to ignore the petty sniping of the SSRC's research programme, which has become such good sport in some of the tabloids.

But they hope he will make some firm recommendations for change, as many might agree with a recent study from Brunel that the SSRC's work does contain "some pretty obvious losers." Academics from backgrounds as diverse as Professor Wynne Godley, professor of economics at Cambridge, Sir Hermann Bondi, member of the National Environmental Research Council, which benefited from the SSRC cut, and Professor Ernest Gallner, professor of philosophy at the London School of Economics who sits on the council, all believe there could be merits in bringing in an outsider to review the SSRC. After all, defending social science research is not necessarily the same as defending the SSRC, although the two are likely to become one campaign.

The final word should rest with the brilliant Mr Posner. He believes chance to demonstrate to a wide public the fundamental and practical research.

This was one of the principles behind the recent restructuring of the SSRC, which perhaps was implemented by Posner one year early, at great cost to his constituency of academic supporters.

Telephone campaign set alarms ringing

Social scientists in the United States are congratulating themselves on having bloodied the nose of an administration which wrongly assumed the social sciences to be politically defenceless.

"It brought out the best in a lot of us," said Mr Russell Dynes, chief executive of the American Sociological Association. "I think we showed a lot of political clout which we never really utilized before."

At first glance, the fate of the social science budget does not look like such a famous victory. The National Science Foundation budget for 1982 proposes to cut spending on social sciences by 26 per cent while its overall budget is reduced by only 4 per cent.

But 26 per cent is a lot smaller than the reduction originally planned by the Reagan administration. Mr David Stockman, director of the White House budget team, started by asking for 75 per cent - a cut which the NSF was seen to accept until the social sciences organized their counter-attack.

Those who led the successful campaign point to three crucial decisions. First, a single headquarters was created to manage the political strategy for all the learned societies and professional associations. Second, the natural sciences and their spokesmen were lobbied remorselessly until they spoke up publicly on behalf of the social sciences. Third, the social scientists resolved to put academic niceties to one side and dirty their hands in the political arena.

Creation of a single headquarters was an organizationally simple but philosophically bold step for the academic community. A group called the Consortium of Social Science Associations (COSSA) had existed for years as an informal Washington lunch club where leaders of learned societies and professional associations would chat about scholarly and administrative topics.

Early in 1981 several members of the group became so concerned about some of the rude things being said about their discipline in Congress and by the new administration that they decided to transform COSSA into a formal political organization. Dr Roberta Miller, a forceful historian working on the staff of the Social Sciences Research Council was given leave of absence and hired to establish an office which could mount a political campaign.

On paper, the membership of COSSA could not have looked highly formidable to the Reagan administration. It incorporated the American anthropological, economic, historical, political science, psychological and statistical associations. Also in membership were the Association of American Geographers, law schools and the Linguistic Society of America.

None of these groups could claim to wield significant political clout, but together they had two sources of influence. First, through academic and collegial contacts they were able to bring pressure to bear on their colleagues in the natural sciences. Second, their combined membership enabled Dr Miller to end her letters to congressmen with the impressive statistic: "On behalf of the 140,000 social scientists represented by the consortium of social scientists..."

community was one adopted by the NSF's science board in June 1981. It said: "The long range interests of the country require a continuing base of adequate support of the social and behavioural sciences so that the research base and intellectual vitality the United States has established in these fields can be maintained and increased."

In March, the NSF's director, John Slaughter, told a congressional committee that the social and behavioural sciences played a critical, "sometimes preeminent" role in the problems facing the country.

He continued: "The enormous challenge facing the foundation and the scientific community particularly concerned with the social and behavioural sciences demonstrates the point conclusively. We must strengthen the role of the behavioural and social sciences within the foundation and strengthen the support to the scientific community in the future."

In May, Dr William Carey, executive director of the influential American Association for the Advancement of Science, wrote in the association's journal that the social sciences were being criticized for appealing only to insiders while the physical sciences, equally esoteric, were regarded as deserving of government support.

The support of their colleagues in the "hard" sciences gave social scientists the confidence they needed to mount an old-fashioned but effective lobbying campaign.

We put together a network of 1,200 individuals in 50 congressional districts who applied pressure to change the NSF vote," Dr Miller recalls. "We tried to stress that support for research should be bipartisan. We got at Republicans and 'boll weevils' Democrats with large universities in their districts. In the end, we even had congressmen saying: 'We will vote for you but please get the telephones to stop ringing.'"

The campaign of telephone calls and the support of the natural scientists translated itself last summer into an impressive debate in the House of Representatives where the balance of argument shifted strongly in favour of the social sciences. Member after member repeated the point, driven home by COSSA, that the decision to cut social science funding had come from the administration and not the science community itself.

Representative Leach of Iowa went so far as to draw an analogy between the Stockman budget plan and the Soviet Union's endorsement of Lysenkoism.

The researchers - Dr Manfred Fox, Dr Andrew Robertson, and Mr Levent Caglar - found a variety of different routes by which academic discoveries were successfully transformed into commercial products, their definition of success simply being that the device reached the market, not that it necessarily did well there.

These different routes involved the NRDC acting as a marketing agent, the academic's university or polytechnic giving commercial assistance, a campus industrial liaison unit giving help, the inventor acting alone or industry stepping in to play an important marketing role.

Commercial breakdown

Is the National Research Development Corporation falling down in its job of marketing scientific discoveries, asks Robin McKie



Britain's National Research Development Corporation, established largely through the efforts of Sir Harold Wilson, is frequently held up as one of the most successful models for organizations attempting to turn basic scientific discoveries into hard commercial enterprise. After all, it made almost £22m for the Treasury last year, much of this from abroad, and has marketed major money-making products such as cephalosporin antibiotics.

It is frequently attacked by academics, of course. Many of them complain that the potential of their discoveries is ignored because of the harsh commercial considerations that monopolize the thinking of the NRDC. These views are relatively easily dismissed by the corporation as mere special pleadings.

Nevertheless, more considered and sustainable criticism of Britain's principal development organization has been made - and one of the most telling of these has been produced by a management studies team based at the Polytechnic of Central London.

Their two-year study, *Inventions from Non-Industrial Sources*, which was funded by the Leverhulme Trust, included visits to 23 universities and two polytechnics; interviews with inventors in 65 departments; and discussions about 146 separate inventions, ranging from improved heart valves to molecular nitrogen lasers to toxic metals monitors to computer controlled water jet cutters.

The researchers - Dr Manfred Fox, Dr Andrew Robertson, and Mr Levent Caglar - found a variety of different routes by which academic discoveries were successfully transformed into commercial products, their definition of success simply being that the device reached the market, not that it necessarily did well there.

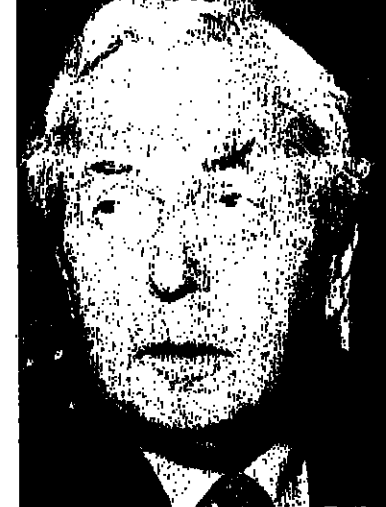
The debate nevertheless required in a decisive defeat for the administration's planned cuts, with 69 Republican congressmen voting in favour of increased support for the social sciences. The part that COSSA had played in preparing the political ground was confirmed later in a letter to Dr Miller from Representative Doug Walgren, chairman of the House Committee on Science and Technology.

He said: "Your efforts to mobilize the social sciences community to reach directly to their own local representatives was enormously successful. Instead of having a situation where a few of us were forced to try to persuade a large group of colleagues of a different mind, you helped build the board congressional understanding of the issue in a way which made my job relatively easy."

must be exploited by the NRDC. The rights revert to the university only if, after six months, the corporation chooses to relinquish them.

"When the NRDC does take on exploitation, it gives no guarantee as to the degree of consultation with the university and the marketing effort which it intends to deploy or indeed the type of arrangement which it is prepared to make with the university," state the report's authors.

"Thus the university and the inventor are placed in an impossible position in which they are obliged to sign away their rights at the outset, leaving them no bargaining power whatever. The result is often one of



Sir Harold Wilson helped establish NRDC

extreme frustration for people who wish to be scientifically creative.

"We have found such situations too frequently for them to be ignored."

This obligation which binds the research council's work to the NRDC is an anomaly, the report adds. It points out that Government research establishments negotiate property rights directly with any company for whom research is being carried out.

Universities should be similarly freed, say the researchers. And to back this they quote one case - which they decline to name - in which a university inventor refused to sign away his rights before he could find out what efforts the NRDC would make to commercialize his invention - but after two years had to bow to the inevitable.

For other inventions, the researchers found little evidence of any consideration of the standing of the scientist involved; the scale of the research deployed; competitive research elsewhere; the value of the invention to British industry; and the opportunity to start new companies or even new industries.

Dr Fox, Dr Robertson and Mr Caglar add that they do not think there appears to be the same commitment from the NRDC to achieve successful commercialization for other discoveries as for the "great inventions" mentioned above.

In terms of practical implications, these mean that:

- Inventions are not canvassed sufficiently widely and intensively to industry.
- When a licence is found, the very act of signing the agreement is considered adequate proof of success.
- Insufficient pressure is brought to bear on the licensee to develop the project for the market and in particular to involve the inventor in problem solving.

The researchers point to the French equivalent of NRDC, a group known as ANVAR, which was originally modelled on the British corporation but which has been completely remodelled in recent years.

The new ANVAR is regionalized with effective decision-making and spending power in 22 offices, decisions being quickly reached for funds up to £50,000 at the local level and above this, with no limit, in Paris. It deals with private inventors, university inventors and small companies and does not insist on taking title to the invention, but gives loans which will be repayable if the venture succeeds.

The crucial point, they state, is that in France the overriding objective is the creation of an innovative climate in contrast to NRDC's simple search for commercial viability.

Of course, managing to market an invention is the minimal definition of commercial success - the degree of market penetration of a product being a far more difficult variable to assess. Nevertheless a discovery is scarcely likely to become a pound earner for Britain if it cannot pass the first hurdle. And if nothing else, Dr Fox, Dr Robertson and Mr Caglar have at least highlighted a major UK failing and have suggested some solutions that must be worthy of consideration.



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The thaw threatens thousands of homes with flooding Charlotte Barry looks at the latest research



The hidden hazards

When flood water poured into the homes of York and Selby earlier this month many people's first reaction was to worry about damage to their most treasured possessions or the threat of losing them. Many were unaware of the less obvious damage the floods could have on their way of life.

Accounts of river or coastal flooding tend to concentrate on the physical aspects and financial cost of damage rather than on the social and economic effect on the community.

Researchers in the Middlesex Polytechnic flood hazard research centre are trying to redress the balance by looking at the indirect effects of flooding and the more intangible aspects of damage.

Dr Edward Penning-Rowse, a reader in geography in the social sciences faculty who heads the centre, said: "The more and more we look at it, the actual disruption caused by flooding could be as much again as the physical, measurable, insurable damage."

A new research project, led by senior economics lecturer Dr Dennis Parker, will look at the economic disruption caused by flooding. The team is setting up case studies, and hopes to look at the recent problems suffered in Selby, as well as the Severn valley.

Dr Penning-Rowse explained: "We want largely residential areas where we can look at the effects of flooding on everyday family patterns, local shops, getting to work, and the temporary closure of businesses even if they are not in the flood area itself."

At the same time the centre will be working for the Severn Trent Water Authority, which has had to deal with severe flooding again this winter, to examine the effectiveness of flood warning systems in helping people to evacuate ahead of time.

The research brings together the social and physical sciences involving geography, economics and engineering and concentrates on the impact of the physical environment on people's behaviour and social patterns.

The centre's national and international reputation has been built up over the last ten years on its economic appraisal of flood alleviation and land drainage schemes for water authorities and local councils all over the country. The team of academic staff and postgraduate students has developed large computerized data sets on flood damage which can be applied to flood alleviation schemes all over Britain.

Research sponsored by the Natural Environment Research Council resulted in the publication in 1977 of *The benefits of flood alleviation: a manual of assessment techniques* which has become the basic reference book for water authorities all over the country.

Some of these techniques have been extensively tested by the Severn Trent Water Authority which has applied the computer methods to more than a score of flood alleviation schemes, including those at Sharnlow, Shrewsbury, Tenbury Wells and Tewkesbury.

Other consultancy work, which contributes to the centre's annual £100,000 research income, includes carrying out full field surveys and computer analyses to gauge the cost effectiveness of river flooding alleviation or coastal flood protection, land drainage or flood warning schemes.

After serious flooding in Dorset over a year ago, the team was called in by Wessex Water Authority to cost a flood protection scheme in the small towns of Bridport and Blandford. More recently in Essex they have been costing a £14.5m coastal defence scheme at Cheshil Beach and Portland where 60 foot waves devastated properties three years ago and caused severe economic disruption to the area round the village of Chiswell.

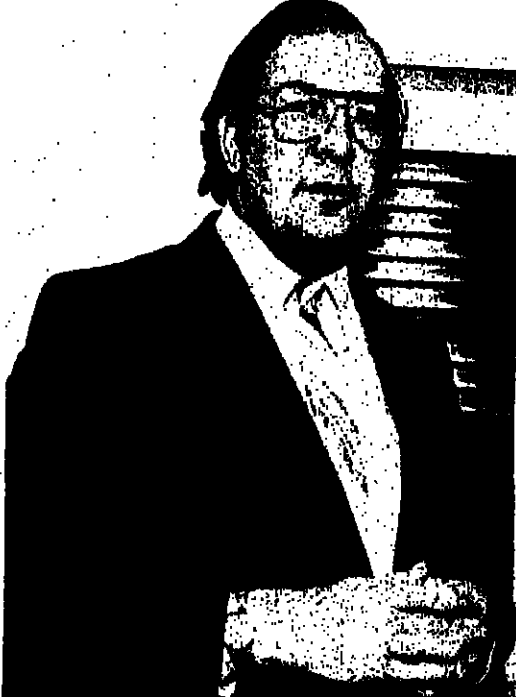
In Kent, the team is still waiting for the results of a public inquiry held last summer over Canterbury City Council's controversial plan to erect a high sea wall at Whitstable. Members of the team gave evidence at the inquiry after local residents blocked the plan to spend £8.5m on

coastal defence. In addition to its consultancy work, the centre runs an annual one-week computer-based training course for water authority workers which has led to further research contracts. Team members also teach on the social science degree, planning studies, the geography degree, the DipHE and computing studies.

Dr Penning-Rowse is enthusiastic about the centre's problem-solving approach which helps build important contacts with private industry and public organizations. "We seem to have found something for which there is a very practical use, and that's why the water authorities are coming to us more and more. At the same time it has academic value in that it has contributed to teaching and rigorous training for students in planning studies," he said.



A Chiswell resident is carried to safety during the Dorset floods. Left: Flood damage researchers Steve Farrel, Dr Edmund Penning-Rowse and Dr Dennis Parker (left to right) with Seasalter councillor Celia Rigden.



Putting the met in the picture

Dr Garry Hunt, of the planetary atmosphere laboratory at University College London, who is one of the pictures taken from the laboratory's meteorological picture service. The service is the only one in Britain which can transform weather pictures into a moving series of images and be used to provide many independent television networks with satellite film of a day's weather, on the same day it was taken.

The key to the laboratory's system is the technique of "interactive registration" which allows images of the Earth to be shifted by computer to adjust for the effects of the movement of the Earth as it changes its position beneath the European weather satellite.

Dr Hunt said the technique allowed scientists to see how clouds and weather patterns were developing without any delay. For instance, the film allowed weather forecasters to calculate cloud and wind speeds and obtain a quantitative understanding of atmospheric conditions.

He added that the pictures were provided at very low cost as the service was used basically as a research tool and also a teaching aid for class.

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However, Dr Hunt said he believed that Britain still did not make enough use of new weather forecasting techniques such as those provided by his laboratory. "For instance, the recent weather has obviously been disastrous but television was slow in stepping in. Forecasters could surely have had satellite and the farming community could have done with special warnings about storms and fogs."

In general there was still a lack of appreciation about the importance of weather forecasting and also a lack of coordination in making use of information in Britain. The Met Office could certainly make good use of the images provided by his laboratory while British Telecommunication could provide greater help in helping transmit data.

Robin McKie
Science correspondent

Modern scholars are rejecting the traditional view of 18th century France, argues Derek Jarret

Whatever happened to our favourite revolution?

"They go on quite as in the days of the old revolution of the last century," wrote Queen Victoria of the Paris Commune in the spring of 1871, "though they have not yet proceeded to all the same horrors. They have burnt the guillotine and shoot people instead."

The guillotine was the epitome, it seemed, of those past horrors. Indeed, devices for the dismemberment and dislocation of the human frame have always had a powerful hold upon the British imagination. The rack played a great part in making the Spanish Inquisition the stereotype for all forms of Catholic intolerance and the guillotine helped to make the French Revolution the archetypal political upheaval.

When Mr Worthing's revelations as to his origins shocked Lady Bracknell into speaking of "a contempt for the ordinary decencies of family life that reminds one of the worst excesses of the French Revolution," she almost certainly had in mind a scene of Parisian violence over which towered the tall shape of the guillotine.

This British fascination with the excesses of the French Revolution has always belonged largely to the realm of fiction, to the world of Sydney Carton, Madame Defarge and the Scarlet Pimpernel, and it has also been swollen and distorted by patriotism and hero worship. Just as the Spanish Inquisition belongs to the same scenario as Drake singeing the King of Spain's beard and then finishing his game of bowls before scattering the Spanish Armada, so the French Revolution belongs - with rather less historical justification - to the stirring exploits of Nelson at Trafalgar, Sir John Moore at Corunna, Wellington at Waterloo.

When all the fiction and all the folk-lore are stripped away there still remains a hard core of real British involvement in the French Revolution. It has been our favourite revolution, our archetypal revolution, not just because of its horrors and its dramatic intentions but because it has very soon become an integral part of our political tradition. Long before Lady Bracknell invoked it as a reverse-mirror image of British domestic virtue others more influential - as well as less fictitious - had done the same thing at a much more exalted level.

"They want of practical religion and morals, which Lord Chesterfield held up to imitation; conducted the French nobility to the guillotine and emigration," thundered Lord John Russell in 1842, "the attachment to his religion, the country habits, the love of home, the activity in rural business, in which the Duke of Bedford and others of his class delighted, preserved the English aristocracy."

In other words, the extent to which the French had got it wrong was itself a measure of the extent to which the British had got it right. The one served as a proof and an illustration of the other, rather as a painter strengthens the light in his picture by putting in dark shadows. One is tempted to conclude that if the French Revolution had not taken place it would have been necessary for the British to invent it.

And that is what many of them did, even from the moment when it first broke out. In a sense the French had asked for it by staging their revolution just as the British were celebrating the centenary of their own "Glorious Revolution" of 1688-

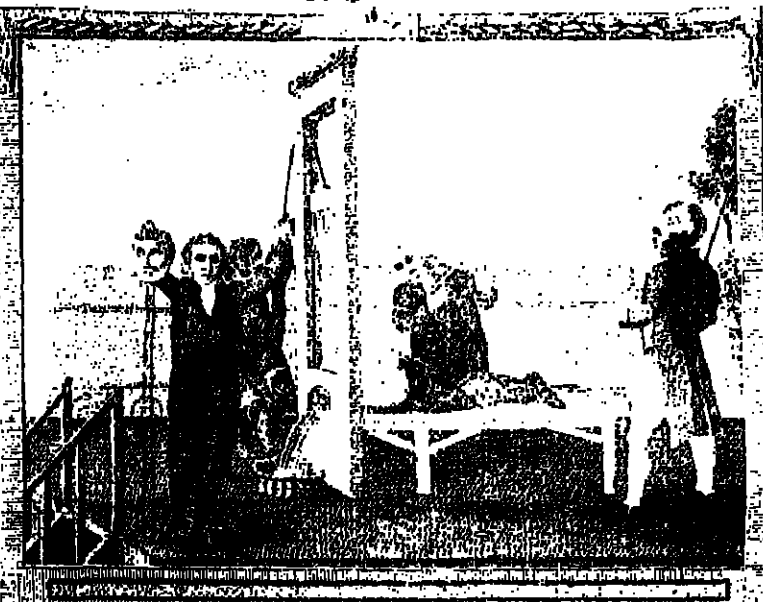
89. The commemoration of one revolution quickly turned into a debate upon another. Samuel Romilly's *Thoughts on the Probable Influence of the French Revolution on Great Britain*, one of the first contributions to that debate, portrayed the French as willing converts to the principles of 1688 - so willing, in fact, that they would shame the British into bringing their own revolution to completion at long last. All the reforms dear to Romilly's heart, from the ending of the Anglican supremacy to changes in the vagrancy laws, would swiftly be achieved as a result of the example set by the French.

Edmund Burke's *Reflections on the French Revolution*, a later and infinitely more influential contribution to the same debate, insisted that what had happened in France was in fact the direct opposite of what had happened in Great Britain a hundred years earlier. On that occasion the British had resisted a king who had been trying, with the help of dissenters and other elements outside the propertied class, to overthrow the Anglican Church and the rights and liberties of freeholders. They had also resisted an attempt by extremists to establish contractual monarchy, to put the Crown in the gift of Parliament, and they had recognized instead the succession of Mary, rightful legitimate heir, together with her husband. It was the things that had not been done in 1688-89, the things that had been so wisely prevented that were now being copied by the French.

The political implications of what Burke was doing were clear enough. The full title of his book was *Reflections on the Revolution in France and on the Proceedings in certain Societies in London relative to that event*; and his attack on the "certain societies" was as important as his attack on the French Revolution. They were mainly societies of Dissenters, men who stood outside that charmed circle of Anglican freeholders which controlled Parliament and the political world. The Marquis of Lansdowne, Burke's most hated political opponent, was seeking to use such men, just as James II had sought to use them back in 1687 and 1688, in the name of toleration and radical reform.

If the French succeeded in establishing a stable constitutional monarchy, a model for reform in Britain, then it would be Lansdowne who would make political capital out of it. If on the other hand Burke's fears were confirmed, if the French demonstrated how totally removed they were from the principles of 1688, then he and his friends would triumph over Lansdowne. He badly needed to re-establish his own credibility as a loyal opposition leader, a reputable alternative to Pitt's government, since he had recently been branded as a rebel and a conspirator against his king because of his outrageous conduct during George III's illness. The debate on the French Revolution, so far from being remote or academic, was part of the hard reality of British politics.

British politics soon spilled over into France. Lansdowne's links with the moderates in the French Assembly, especially with Mirabeau, produced a violent reaction there against those moderates and against the 1688ish revolution which they were advocating. Later, in 1790 and 1791,



Beheading of Louis XVI by the guillotine, January 21 1793.

Burke's *Reflections* gave comfort to the French emigré nobility while at the same time hardening attitudes within France to them and to their plans for invasion and counter-revolution, plans which Burke publicly applauded and encouraged.

The prison massacres in Paris in the autumn of 1792, followed by the execution of Louis XVI and the French declaration of war on Great Britain, ensured that the debate was well and truly won by Burke and his supporters. Many of them joined the Pitt administration in 1794, making it considerably more conservative and reactionary than it had previously been. Lansdowne, on the other hand, became "one of the suppressed characters of English history," in Disraeli's phrase, and the causes for which he had fought were rendered politically disputable.

Things began to change after 1815, when the aristocracy of France ceased to be romantic exiles and became once more the servants and advisers of a Bourbon king, restored by the British but not necessarily well disposed to them. Tom Paine had declared back in the 1790s that Burke "plucked the plumage but forgot the dying bird"; and now at last even respectable propertied men began to believe him. French noblemen, the showy plumage of their nation, had been given altogether too much sympathy. They now began to be cast by the British not as the victims of the Revolution but as the villains. How else had Britain herself avoided revolution if not because of the innate superiority of her landowning classes and of the system over which they presided? The French, caste-ridden and tyrannical and unbending, had got only what they had deserved.

In the year of Queen Victoria's accession, when Thomas Carlyle's *History of the French Revolution* produced a colourful but largely inaccurate picture of the evils of feudalism in pre-revolutionary France, it was not only Lord John Russell who turned to it for comfort. Thousands of respectable, propertied people in Britain now saw the French Revolution not as a glorious achievement or an unmitigated disaster, the alternatives during the years of the great debate, but as a necessary overtaking of the sinner's God's punishment for the sins of the haughty French. And because kings and princes and lords in the rest of Europe had also been pretty haughty it had engulfed them as well for good measure.

Only Britain had remained unscathed. Just as the Protestant chapel in Lisbon had been the only building to survive the great earthquake of 1755. There was an obvious lesson to be learned and it was not just that Britain was an island or that her repression of revolutionary tendencies had been particularly effective. It was that her social and political systems were flexible, liberal, able to adapt to change. Britain had been able to bend, France had had to break.

Several factors worked to strengthen and confirm this reassuring myth during the selfconfident years of Queen Victoria's reign. Dickens went to Carlyle for his facts, so that

The 1980s present a very different picture. Scholars from all parts of the world have entered the field of French revolutionary studies and they have come up with some disturbing conclusions. Recent work on law and order in the French countryside suggests that in many areas the peasants, far from being good and down-trodden, were a good deal more unruly than their counterparts in Britain. They were liable to go on the rampage, especially on Sundays, shooting at the local lord's game birds, at his halliffs, sometimes at the local lord himself, all with comparative impunity.

If English labourers had done such things they would have been apprehended by the constable, dismissed by their employer, tried by the local Justice of the Peace; but in France feudalism knew nothing of such processes. Seigneurial justice was a dead letter and the peasant - at any rate in theory - worked his own land and could not be dismissed by anybody. His home was his own; not a tied cottage from which he could be evicted at will if he lost his job. The so-called "peasant revolution" of the summer of 1789 is beginning to look less like a desperate uprising of a terrorized population, more like a particularly widespread and determined example of a form of violence which had long been endemic and in which it was the peasants themselves who were the terrorists. If it did not happen in Britain it was not because the grievances did not exist but because there were far more effective means of repression.

The haughty aristocrats are going the way of the down-trodden peasants. Certainly the peerage of Great Britain at the end of the eighteenth century was far more exclusive than the noblesse of France. In France the bourgeoisie could purchase patents of nobility with comparative ease and they could also purchase lands which carried with them

seigneurie. Indeed, many of the complaints in the *Cahiers des Doléances* of 1789 about feudal exactions turn out to be against lords who were of bourgeoisie extraction.

In Britain, on the other hand, there was a far less fluid land market and far fewer opportunities for moneyed men to purchase offices which carried any guarantee of advancement to the peerage or even to the status of an ordinary country gentleman. Nor were the French aristocrats limited to feudal land ownership as a way of life: recent research has shown them playing a considerable part in industrial and other capitalist ventures. In some parts of France, notably around Toulouse, most noblemen drew the bulk of their revenue from sources other than feudal. In short, the clear-cut division between the noblesse and the bourgeoisie, the division upon which the traditional view of the French Revolution largely rests, seems to be getting increasingly blurred.

If we turn from demography to chronology, from social structure to the passage of events, the conclusions to which we are now being forced are no more reassuring. We used to think that the revolution really began in 1787 when Calonne tried to take away the tax exemptions of the nobility.

The proposals he put before the Assembly of Notables in February 1787 included one to extend those tax privileges by giving the nobility exemption from *capitation*. Historians who have long believed that the nobility did not pay *capitation* in any case have chosen to ignore this provision, just as they have ignored the fact that the Comte d'Artois, future leader of the emigré nobility, was the one Prince of the Blood who supported Calonne in the Assembly of Notables. This was because the year of 1787 was not just about taxation but was also about the rigging of the Paris stock market, in which Artois was deeply involved with Calonne.

The abbé Siéyès, whose neat equating of privilege and nobility in *Qu'est-ce que le Tiers Etat?* was so influential, seems also to have had financial motives. He knew that government creditors would never get their money back would be faced with a government bankruptcy, unless an effective land tax, based upon a proper means of assessment, was passed quickly. He also knew that the landowners of France, for the most part bourgeoisie and peasant rather than noble, would oppose such a tax bitterly.

Therefore the best way to get it through and avoid a bankruptcy was to represent opposition to it as purely aristocratic, as the selfish last-ditch stand of a privileged nobility. In this he succeeded brilliantly: as well as providing a manual of action for the revolutionary events of 1789 he also provided a foundation upon which historians could erect, in defiance of a bourgeoisie revolution against feudal oppression.

It is still a very resilient and powerful myth, if only because modern research has nothing to put in its place. As we prepare for the bicentenary of the French Revolution in 1989 we have many doubts and few certainties. We can call into question the reliability of the materials out of which the Third Republic built its politically convenient view of the Revolution a hundred years ago but we have yet to find a way of using our new materials to any really constructive effect.

Perhaps there will never again be a neat and simple explanation of what happened in France in 1789. There is, however, a simple enough explanation of what has happened in Britain between that date and this. The British have invented and cherished their own French Revolution, one which can always be relied upon to reassure them as to the rightness of their own political instincts. And now, just as they are beginning at last to have their doubts about those instincts, they may also have to learn to do without their favourite revolution.

The author has written *The Betegers of Revolution: England's involvement with France 1759-1789*.

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The difficult escape from dogma

Polish sociologist Wladyslaw Bienkowski examines the problems of constructing a general theory of society

The American sociologist Paul Lazarsfeld recently declared that sociology is in a state of disintegration.

"Sociology has not developed as a clearly defined discipline but is the product of residual activity whose task is to fill the empty spaces on the intellectual map. . . . It can be said that there is no sociology as such but that there is political, medical, legal, family, urban, etc. sociology. Reference groups, roles, stratification, socialization . . . are important tools of analysis but in no sense do they create a coherent whole from which we might derive a 'theory of society'."

It could be said that this is the normal situation in every field of knowledge, that with the development of research the natural sciences also disintegrate into increasingly narrow, specialized disciplines.

There is, however, a fundamental difference between the natural and the social sciences. The most highly developed specialization of the former does not undermine the overall coherence of our knowledge of the natural world; each separate discipline is based on the same general laws; specialized research verifies, disproves, or develops the general assumptions of this area of knowledge.

A diametrically opposite situation exists in the social sciences. The separate disciplines seek their own assumptions, which are relevant only for a given sector. They lose all substantive and formal links with each other and exist completely independently. As a result, not only our knowledge about society disintegrates but, in our imagination, society itself disintegrates and ceases to exist as an object of investigation.

Everything that we think about acquires a fragmented form and the result is that our everyday intuition that society constitutes some kind of unified "organic" whole is confirmed not by science but by various kinds of beliefs in the form of this or that "ideology."

The majority of sociologists blame the lack of a general social theory or, more precisely, "a theory of society". Various reasons are advanced in explanation of this situation. Merton considers that there is too little research compared with the amount devoted to the natural sciences and technology. In his opinion, research should be carried out on the basis of narrow, fragmentary (middle-range) theories in the hope that a sociological Newton will emerge to uncover general laws and construct a global social theory.

Obviously, it is difficult to oppose such a hope, although the application of middle or narrow-range theories on an ad hoc basis almost automatically multiplies research and intensifies the dispersal of social phenomena, diminishing any hope that we are getting any nearer to the construction of a totality from all these fragments.

There is a rather stronger pessimistic view of whether such a theory is in fact possible and a number of opinions as to why it is not. A Dutch sociologist, F. L. Polak, writes that "it is impossible to construct a general social theory because the basic condition cannot be fulfilled: a general social theory must be an objective theory and an objective theory is impossible."

Alfred Weber sees the cause of the impossibility in the differentiation of the world and the heterogeneity of the processes in different societies. If the world consisted of only one society, he writes, and the processes of civilization were primordial, it would then be possible to develop a general social theory, and each society creates its own kind of sociology.

Many other similarly pessimistic views could be quoted. The majority emphasize, however, that despite the slender hope of discovering a general theory, sociology will not cease to search for one. W. Wallace suggests that sociology as a whole can only be seen as the end result of a fruitless but desirable search for a single general theory to which all special

theories, all empirical generalizations, hypotheses and observations, could be adequately related and thereby explained.

Finally, some people consider, like Percy Cohen, that the idea that sociology can provide a general theory of social change is a myth and we have to accept that the totality of social phenomena can be explained by various theories which are complementary.

A similar view is held by Sorokin, who considers that existing theories contradict each other or are mutually exclusive only when they are false. Dahrendorf also supports the multiplicity of theories, declaring that some phenomena are explained by the integration theory of society and others by the coercion theory, and that both are correct because society, like Janus, has two faces and both of them correspond to different aspects of social reality. Meticulous people have compared this with the Indian proverb in which seven blind men examine an elephant and arrive at correct statements concerning the parts which they have examined but produce no picture of what an elephant actually looks like.

General social theory has become the philosophers' stone which is blindly sought in either completely conceptual constructs divorced from and untested by empirical reality (Parsons) or the adoption of the model of the natural sciences. During recent decades, many "middle-range" theories (role theory, field theory, interaction theory, action theory and many others) have emerged. These may even have some utility; they allow one to view some phenomena in a specific way and may be useful in solving practical problems. Each of them constitutes, however, a blind alley which leads nowhere.

One could reproach the whole of our discussion so far for concentrating on "global" (holistic) intuitions and failing to concretize the conditions which a general social theory should satisfy, ie what it should deal with. Marxist theory was a creative impulse which made the transformation of social structures the central problematic. Its limitation as a general social theory resulted from its ontological premise concerning the prime cause of social change. This gave marxist theory a *genetic* character and left it in an ambiguous position; on the one hand, it had to defend itself against the consequences of monogeneticism and, on the other, it could not acknowledge polygeneticism without undermining the basic coherence of the theory. Steering a course between these two positions led to numerous difficulties and inconsistencies when the theory was applied to phenomena which had a tenuous or imperceptible link with the material economic base.

On the other hand, marxism's suggestion that a general theory is possible as a *theory of development* - free, however, of its ontological premises - is a fruitful one. What we know today indicates that there are many factors which give rise to social phenomena and affect social processes, and they cannot be reduced to one genetic source.

It was relatively late, probably in the later period of the Renaissance, that it was noted that changes in social life were neither accidental nor cyclical; that they were the expression of some kind of broader process that they led to the "improvement" of at least some aspects of life.

The concepts "development" and "progress" made their appearance early in the nineteenth century, particularly under the influence of Darwin's concept of "evolution" and gained currency in this century by the applicability of all these concepts to social phenomena. "Progress" has been questioned in view of its clearly subjective value content; the notion of "social evolution" has also been questioned.

dually undermined on the grounds that it implies an analogy with the processes of the natural world. In recent years, the term "development" has almost completely disappeared from sociology (except for the marxist school) to be replaced by the term "change". It is characteristic that economics is also abandoning the notion of "development" for that of "growth".

The motives are the same: "development", like "evolution", is said to assume a particular set of values - it suggests that society is moving from a "lower" to a "higher" stage, from a "worse" to a "better" one, when we have no criteria on which to base such values. Secondly, the notion of development is considered to contain within it elements of teleology, ie the view that mankind is developing in a certain direction, towards a definite goal. Such loaded ideas should be eliminated from science and the notion of change is seen as free from all such implications.

The argument against development is clearly a *bi-directional* one. It is difficult to agree that a state seen as worse to one seen as better. In everyday usage in all fields, development signifies transition from one state to another, regardless of which of them is considered better or worse. Thus we refer to the development of a child and the development of an illness, the development of education and the development of alcoholism. Fear of teleological connotations can be seen as based on recollections from the distant past which have already faded from consciousness - with the exception, obviously, of philosophers whose function it is to remember them.

Conversely, the term "social change" is by no means as innocent as it is claimed; it contains the clear suggestion that the change with which we are concerned at a given moment takes place "in isolation", is unconnected with any other changes. Development, on the other hand, not only suggests but assumes that an observed change is part of a more general transformation, that it is connected with other factors. It contains a clear allusion to a *process of transition from one state to another*; the reference-point is the given social situation which is undergoing transformation. In contrast, the term "change" is used in such a way as to imply the *isolation of phenomena*, and it presents change as an act devoid of any connections with preceding states or changes in the phenomena.

The widespread move to the use of the term "change" is by no means simply a shift in terminology but reflects the main trends in contemporary sociology. Sociologists divide society into fields and then into individual phenomena which are isolated from the general social context. Since our research methods and tools of analysis are not adapted to the study of society, society must be adapted to our tools and methods. In this way sociologists produce thousands of photographs of various segments of reality; they photograph particular changes and even improve the quality of these photographs, but no computer or superhuman brain is capable of creating from these scraps an image of social reality with all its connections and dependencies, and cannot reveal social processes.

The very notion of a change implies its *preparation*, its *maturation*; it implies the existence of a process which we have observed. It is precisely this process of transition from one state to another, regardless of whether we assess it positively or negatively, that we call development.

The kernel of any general theory must be a *theory of development*; ie a theory which explains the processes taking place within societies. It was the need to uncover these which led to the emergence of the social sciences. If societies did not undergo pro-

cesses of development, and if all changes were simply accidental mutations, as in nature, the natural sciences could have devoted themselves to them, as they do to societies of ants and termites. Sociology would not have been able to emerge at all - it would not have been necessary.

The transposition of philosophical problems and concepts to scientific analysis will always give rise to misunderstandings. This is particularly true of the social sciences because many general propositions or even metaphors may be of heuristic value in orienting research. In general we do not notice the imprecision or contradictoriness of everyday statements and truths. For example, the statement that "social being determines social consciousness" when formulated by Marx was a discovery, but we have no reservations about it because we accept its sense, its general guideline for the researcher, not its logical implications. Its strict interpretation would evoke too many doubts (eg the ambiguity of the word "determines") and would have implications unacceptable within the framework of marxism itself.

One such implication would be the closing of the cycle between being and consciousness; confinement within a given being and a given consciousness. If it is possible in marxist theory to juxtapose the following sentences: "social being determines social consciousness" and "social consciousness rebels against social being", it means that we are on the terrain of another language. The first observation must be that "determines" in its strong sense does not mean the same as "determines" in its weaker version. The chief meaning of the former is *limitation*. Something which is determined may not reveal all its characteristics, but all those which are revealed are determinations. Obviously, determinism in the sense cannot be applied to social phenomena not to marxist theory, which assumes the active and creative participation of man in shaping the social product.

Connected with this are misunderstandings concerning the role of the economic factor in determining social development. Despite widely held views to the contrary, it is not the primacy of the economic, not the primacy of means and relations of production, which is the fundamental tenet of marxist theory. The point is the *changeability* of this factor, the transformation of means and modes of production. Only these changes convey anything about their role, namely a chain of further transformations. Without changes in modes and relations of production, the marxist thesis loses its meaning in the kind of situation which anthropologists find among many primitive tribes or even in developed "traditional" societies. What is more, despite the stability of their relations of production, these societies undergo some kind of change.

If marxist theory assumes the changeability, the development of the economic "base", we then have to ask what causes this change, since tools of production neither multiply nor improve on their own. It would be pure mystification to assert that the economic base contains the embryo of all future forms and all social relations, and thus of it.

It is true that man has become used to regarding economic development and technical achievements as though they happened automatically. Man thinks, not without reason, that the economic system has its own internal dynamic which orders it to develop. But that which allows this dynamic to function is not the work of economics and is not derived from it; at work here is creative human inventiveness which is made possible by the existing level of technology but which is by no means determined by it.

All societies which left pre-history behind them have had a differentiated internal structure, and the basic differentiating factor has been the relationship to the means of production. Nevertheless, this did not make them similar to capitalist societies. In all these formations, both the so-called eastern (China, India) and the ancient, which included the ancient Mediterranean world up to European feudalism, the economic system was not subject to the laws of capitalism. They were traditional, conservative systems with a slow development of the productive forces and methods of production, and economic factors exerted a much weaker influence over social life.

Relationship to the means of production (ownership or non-ownership) was by no means the only criterion of social differentiation. Social divisions in these societies which we conventionally call traditional generally took the form of estates or castes. There existed enclosed social groups with a specific status, and the lowest groups or strata were usually deprived of all rights. But these relations were connected in a variety of ways with relations of ownership. In eastern systems the ruling stratum of Chinese feudal barons was, for long periods, deprived of all inherited property. All property was in the hands of the state emperor who granted his favourites land for their use during their lifetime. These feudal barons did not constitute a stratum based on inherited property.

This already indicates the substantial differences in structure and mechanisms between capitalist and pre-capitalist formations. If, in relation to the latter, we can speak of property owners, social classes, and class struggle, or even of the proletariat in the sense which these terms have acquired under capitalism, it is only as a rough approximation, as a metaphor, and it is due to one fact only - that all these forms were based on the exploitation of the labour of the lowest stratum and slaves, that the privileged class appropriated a substantial part of the social product.

If we go further back, to primitive social forms, about which we now know much more, we find that the laws formulated by marx at an absolutely inapplicable level would appear to have fundamental significance for the whole of social theory, in primitive social formations there must exist some kind of "germ" of the motive force which caused man from the very dawn of history to transform his conditions of existence, albeit at what now seems a very slow pace. So far, pre-history has been the domain of archaeologists who have provided convincing arguments to the supporters of technological determinism; which has undoubtedly contributed to the one-sidedness of many views on social development.

The original sin of all general social theories until now, which leads to their inadequacy in the face of empirical reality, is the fact that their godmother has always been the natural sciences. Scientific theory, writes Braithwaite, is a deductive system in which perceived consequences are the logical result of the conjunction of observed facts and the basic hypotheses of the system. Scientific hypotheses - if they turn out to be correct - become scientific laws and are accepted as valid for an unlimited range of phenomena in time and space. Humans similarly emphasize the deductive approach: "What we often call a theory is a cluster of deductive systems."

In the preface to Volume I of Capital Marx writes that he views the evolution of society as "a process of natural history". Since the time of Comte, the majority of social scientists have taken as their ideal the construction of a social theory modelled on natural-scientific theories. This has been not merely their ideal but the only

dogma

possible model, which had to be achieved at all costs; since theory could not be extracted from the chaos of social phenomena, a theoretical framework had to be imposed on the chaos. Indeed, the more we focus our analysis on a narrow range of homogeneous facts, the greater are the possibilities of formalizing research methods and utilizing quantitative approaches. In particular, if we refer to probability theory we may delude ourselves that we have taken an important step in making the social sciences more "rigorous" or scientific. But this actually constitutes a retreat from general theory, and there is now increasing pessimism about the possibility of achieving this by following the model of the natural sciences.

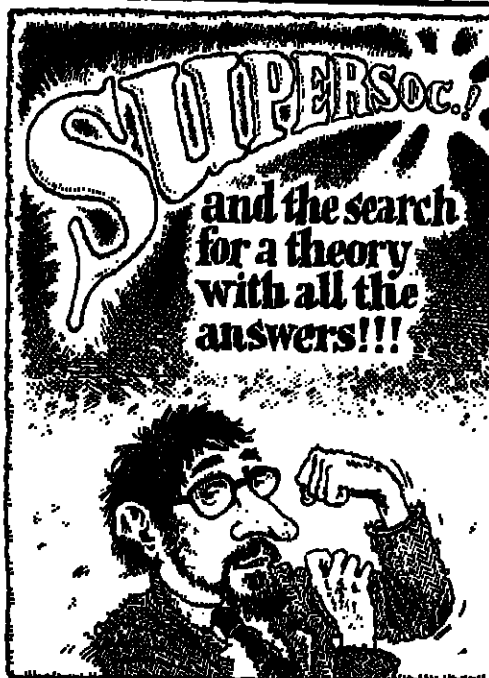
The main difficulty by no means lies in the impossibility of constructing a theory which explains past phenomena. A theory should also explain the future; knowledge should help us to predict. Theory can only be confirmed and scientifically verified by its consistency with future facts. From this point of view, none of the existing theories has withstood the confrontation with the course of history; they have all failed at precisely those points where they approximate most closely to the model of natural-scientific determinism. This applies equally to the most cogent of them - marxist theory, whose predictive value has most closely followed the actual course of events. But for many years there has been a disparity between predictions based on marxism and the course taken by real social processes.

The deductive character of social theory is here related to the problem of social determinism. In both cases the system of statements must be complete. Conclusions are reached by deduction and nothing may take place "along the way". It has proved impossible to fulfill this demand in the social sciences; in society unforeseen factors intervene too often. As a result, the social sciences oscillate between two extremes: on the one hand, we emphasize their complexity and specificity due to the particular nature of social facts and the multiplicity of factors, and we adopt various kinds of agnosticism; on the other hand, there is still a strong belief that the difficulties encountered are purely technical ones and that improvements in methods; particularly with the growth in computerization, will allow us to overcome them.

All the history of human society so far, together with the positive and negative experiences of the social sciences, suggests that the fundamental difference between any category of natural phenomena and social reality lies not only in the character of the facts themselves but above all in the *different kinds of systems* formed by social facts on the one hand and by natural facts on the other. A social system is one which is capable of giving birth to impulses which influence the state of the whole system and are capable of deforming it in comparison with what we would have expected to emerge on the basis of the initial state. Moreover, these impulses are not fortuitous or discrete but are the product of constant sources of energy.

At least three factors can be identified as the source of impulses which influence social systems and bring about unforeseeable changes. The first of these is the *creative capacity of the individual*. The individual is an "unknown quantity". Even the most rigorous determinism or the softer version which accepts the social "conditioning" of all human activity are unable to deny the individual's capacity for acts and creations which cannot be predicted from existing premises, and which as social facts may change the course of social processes.

Those who emphasize the unpredictability of the future see the main cause, as does Popper, in the development of human knowledge. The problem is more complex than this, however, since man's intellectual products include not only scientific discoveries but also ideologies and



religious beliefs which can exert considerable influence over social processes.

The second factor, which will be discussed in more detail below, consists of *institutional dynamics*. The "conservative" processes of petrification which take place in institutionalized social forms have long been noted, but less attention has been paid to a more important phenomenon: the fact that institutions manifest their own developmental dynamic, a tendency to growth and transformation which does not derive from the impulses (goals) which led to their creation. Institutional dynamics, as we shall try to show, are one of the main factors which divert social systems from the course which man intended (this, obviously, only since the time when man has harboured such intentions).

The third factor has been little investigated and is much more difficult to grasp. It results from the cumulative capacities of social systems. Every social fact, every action evokes a multiplicity of consequences, direct and indirect, of differing degree of indirectness; consequences which may be visible or hidden and potential, which may be observed with difficulty or not at all. We are not concerned here with consequences which establish themselves in the form of tradition or culture, it is not a question of what Merton terms the latent functions of social institutions, but of consequences which do not become institutionalized but persist and accumulate in society as emotional states, states of consciousness or, more often, of the unconscious.

Political and social and political activists generally do not realize that society constitutes a giant accumulator which registers even the distant echoes of events taking place on the surface of social life, emotional states and frustrations which do not find direct expression but exist in a potential state and may influence social processes in various ways.

In favourable situations, the energy accumulated in this way may lead to violent explosions with unpredictable consequences, as can be witnessed during revolutionary crises. In normal conditions also, this energy

can influence the course of events and is one of the basic causes of social tensions. The social scientist cannot afford to ignore the influence of this factor and must at least be aware of its existence.

Every general theory is in danger of being "excessively general". This is particularly the case with the social sciences, whose field of research extends in time and space over innumerable phenomena and processes on many levels, each of which escapes precise definition. Narrowing the field of problems to those related to social development, narrows it only very little; on both the diachronic and synchronic planes we are faced with countless dependencies, mutual interactions and complex linkages. There is a real danger that a hypothesis which embraces the regularities of these connections will be too general and thus capable of "explaining everything".

Popper has pointed out that Freud's followers are able to interpret all observed facts in such a way as to confirm his theory, and similar charges have been laid against marxism. The only way to avoid this is to demand that the fundamental test of any theory's correctness should lie in its refutability.

This condition, transposed from the natural sciences, demands the fulfilment of another condition: the unambiguous interpretation of phenomena. In the social sciences this condition simply cannot be met; we can approximate to it only in the case of the simplest facts - for example, those which can be quantified (although even here disagreements easily occur), and a great deal of current sociological production takes place in this field.

Unfortunately, fundamental social facts are complex and every attempt to break them down into simpler elements generally destroys their specific meaning. It is also worth noting the logical fault in the demand for refutability: it implies that a theory which can be refuted is *certainly* incorrect; on the other hand, a theory which has not been refuted or whose structure renders it difficult to refute may be correct or incorrect, and its acceptance or rejection should be decided not by its

refutability but by its explicatory or heuristic value, above all by what we call its fruitfulness.

Here we are concerned not with one of the fundamental questions of philosophy but with the structure and methodological premises of the social sciences. Our discussion so far has led to the conclusion that a general social theory can be constructed only as a theory of development, ie as a complex of statements concerning the structural transformation of social systems and the factors which bring this about. The current state of our knowledge allows us to formulate and substantiate the basic statements of such a theory. The theory of social development creates a general framework in which to locate a multitude of social phenomena and processes, it allows us to treat society as a coherent functioning entity, as a social system.

This does not mean, however, that this theory deals with all areas and forms of social life, that the factors decisive for changes in the social structure explain, let alone determine, other areas of social activity. All attempts so far to construct such a general social theory have ended in failure, because of the incorrectness or inadequacy of the premises of this kind of monistic approach.

The nineteenth century constructed its vision of society on philosophical (ontological) premises. Propositions concerning the "materiality" or "spirituality" of the world then appeared to determine the nature of social phenomena, their dependence on the basic "substance". Hence the majority of social theories constituted "philosophies of history" which developed the logical consequences of a priori philosophical premises.

The basic method of the philosophy of history consists in substantiating constructs based on a priori premises by *exemplification*, by the search for confirmatory examples. Clearly, the history of mankind will always provide sufficient examples which, if suitably interpreted, will create the impression of the "truthfulness" of such philosophical approaches.

In contrast, the task of theory which meets the demands of scien-

tific rigour is to construct a system of statements based on generalizations derived from observed phenomena.

The "hypotheses" formulated by science, ie statements which have not been proved, have nothing in common with philosophical premises; they are a methodological exercise which indicates ways of searching for the explanation of specific relationships between phenomena. A hypothesis which has not been confirmed empirically can always be rejected and replaced by one which appears more fruitful.

Nineteenth-century thinkers generally displayed little understanding of the distinction between social philosophy and social theory, of the fact that the premises of metaphysics do not authorize one to formulate any statements about empirical phenomena. This tradition became firmly rooted and examples of it are still visible, although somewhat more camouflaged than during the last century. This is because "philosophizing" about social matters accords the intellect far greater freedom to construct bold ideas.

Marxism, which assumes the unity of philosophy and sociology, is an example of the continuation of the philosophy of history, constructing knowledge about society on a priori basis. The unity of philosophy and sociology satisfies the needs of ideology; it creates a global Weltanschauung based on "unquestionable" assumptions, in contrast to science whose statements are never unquestionable. There are a number of reasons (ideological and political) for the dogmatization of marxism, but the main one lies in its premises. Philosophical propositions are, by their very nature, dogmas, and all statements based on them become dogmas in their turn. Just as every piece of iron acquires magnetic qualities when in contact with a magnet.

The author was minister for education in the Communist government in 1956 and is now a "firing" university lecturer. This article is an extract from the author's book *Theory and Reality* translated by Jane Cave and to be published on January 28, 1982 by Alison and Busby.

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BOOKS

In search of the earthly paradise

by Iain Wright

Political Pilgrims: travels of western intellectuals to the Soviet Union, China, and Cuba, 1928-1978 by Paul Hollander Oxford University Press, £15.00 ISBN 0 19 520937 2

This is a depressing book and an important one, but it is more depressing and less important than it ought to be. It provides striking evidence of the readiness of intellectuals to accept and to propagate simplistic and over-polarized world-views, but in more ways than its author intends.

Its pedigree is clear. Its grandfathers are Julian Benda's *The Treason of the Clerks* and some of George Orwell's more splendid denunciations of naive pro-Sovietism and "fruit-juice drinkers, sandal-wearers, sex-maniacs and feminists", a passage which Professor Hollander has the nerve to quote in support of his own case (it was at this point that I realized what it was that his persistent antagonism to feminism and gay rights activists reminded me of). Its parent is that sour and beleaguered work of Edward Shils, *The Intellectuals and the Powers*, which is repeatedly and reverently cited.

Shils and his pupil both set out to explore the perplexing fact that many western intellectuals actually seem to view their own societies and rulers with "suspiciousness and hostility" (the phrase from Hollander's opening paragraphs) or "revulsion" (the one from Shils'), and to hope in their deluded Platonic way that a better world might be found or prefigured elsewhere. Why, puzzled Professor Shils, should intellectuals so distrust "authority"? Several factors had played their part here. He thought: scientism, romanticism, anti-intellectualism, populism. But the one which he especially underlines in 1958, having just read Norman Cohn's *The Pursuit of the Millennium*, was "the revolutionary tradition" which, unsurprisingly, turned out to be "essentially the same thing as the apocalyptic or millenarian tradition".

Professor Hollander's book, the first and third chapters of which carry epigraphs from Cohn, is in effect an extended extrapolation of Shils's point, and the impressively detailed application of it to what Hollander rightly sees as a widespread and symptomatic modern phenomenon, the quasi-religious pilgrimages of western intellectuals to the Soviet Union, China, and Cuba in search of the earthly paradise.

If one could read it entirely as that—as a sampler of utopian fantasies subduing the rational faculties of left-wing intellectuals—the book would be a formidable achievement. Its author calls it an exploration of "the outer limits of gullibility" and it is a chilling and often grotesquely tragicomic chronicle. Here is Shaw assuring his readers that Stalin's labour camps are so delightful that the authorities have great difficulty in inducing the average prisoner to leave them: "As far as I could make out they could stay as long as they liked." Here is the standing in the midst of the largest and subsequently most notorious of the gulags of the Soviet Far East, and writing that the operations of Kolyva were roughly the same as those of the Hudson Bay Company. Here are the Webbs, enthusiastically and unironically reporting Stalin's remark that "man must be grown as carefully and attentively as a garden grows a favourite fruit tree". Here are eager assurances that the Moscow Trials were models of judicial fairness and that Madame Mao's cultural policy was "the best thing that ever happened to Chinese intellectuals. It is a noble effort to break the sterile, rigid, and suffocating atmosphere of the old China, but westerners infusing a ludicrously inflated illustration of Hollander's thesis that westerners project their own psychodramas onto charismatic third-world revolutionaries.

As an anthology of exemplary gulls *Political Pilgrims* is memorable, and a sobering reminder of the harm which modern leftwingers have done to their causes as a result of their childlike thirst for hero-models. But Professor Hollander's ambitions, declared and undeclared, are grander than those of an anthologist. He offers his book as a contribution to a general theory of the intelligentsia, and also, as gradually becomes clear, as a generalized attack on utopianism, an indiscriminate and indiscriminating diatribe against socialism, and something approaching a defence of the American Way of Life—a call for American leaders to renounce their "authoritarian" and America's "moral mandate" in the world. It is a measure of Professor Hollander's innocence or of his arrogance (and it really is very hard to make out just how consciously cynical a work this is) that he nowhere shows any awareness of the extent to which these projects are likely to be incompatible with one another.

The result is the oddest mixture of a cool "value-free" social scientist's style with a savage and sarcastic tendentiousness. Hollander is continuously prone to that same confusion between "the projection of preconceptions" and genuinely "empirical observation" which he sets out to diagnose in his subjects. His methodology gives way at the seams,

whenever one asks oneself just how aprioristic it really is. What of his principles of selection of evidence, for instance? By all means compile an anthology of "political daydreaming", but how may you then claim that "the tenacious leftism" of western intellectuals... was one of the interesting findings of this study" when only leftists, and only one kind of leftist, and those only in their most myopic moments, were included in the first place? Where are the utopians of the right, for a start? Why only two pages on pilgrimages to Nazi Germany in the thirties against a total of one hundred and forty on Soviet Russia? Even if it be granted that left-wing utopianism is a more marked postwar phenomenon than the right-wing variety, is not Professor Milton Friedman's idealized Japan as mythical, and as interesting to the historian of human aspirations, as Professor Noam Chomsky's North Vietnam?

Hollander's penchant for self-validating modes of argument, and for a version of the very "double standards" which he claims to be exposing, is most evident in the way that he relentlessly subjectivizes (and trivializes) his subjects' political judgments. The principal topic of his study, he tells us, is "the amalgam of alienation and utopia-seeking peculiar to many western intellectuals". What this turns out to mean in practice is that his subjects only claim to be motivated by a concern for social justice and deprivation but are actually engaged in constructing fantasy-compensations for their personal maladjustments: modern intellec-

tuals, he thinks, often "use politics as personal problem-solving devices", while "alienated social criticism is often and in part a reaction to the frustration of the religious (meaning-seeking) impulse for which the critic blames the social environment". Perhaps. But it's hard to take seriously an account which is framed entirely in these terms, and which reduces all modern youth protest movements to Oedipal games ("reflexive sympathy with the enemies of their parents' generation").

The trickery of the device becomes evident as soon as we ask whether Professor Hollander would be as ready to dismiss the "alienated social criticism" of a Solzhenitsyn, or a Kolakowski, or the dissident intellectuals of his native Hungary or of Solidarity? Surely not, for there he would discern an objective social basis to their alienation. Idealism and "utopia-seeking" is apparently only subjective (ie false) when it is directed against social systems, or which Professor Hollander approves. The grounds on which such approval is given or withheld are never systematically stated, but Hollander is clearly a man of strong political preferences, and when his own value-judgments slip out they are revealing. In a footnote on anti-Americanism (which he sees as "the other side of the coin" of the quest for left-wing utopias, the latter being a misplaced expression of the former), he suggests that the phenomenon has four main components: affluence; a pervasive global cultural presence and appeal; the combination of power with the weakened will

to use it; and the American propensity for guilt and self-criticism. Not a hint that some "objective" factor, such as military aggression overseas, might also have played its part in the disaffection of American youth in the sixties. Or am I being unfair? Perhaps the phrase "cultural presence" is meant to include the cultural presences so memorably manifested at the Bay of Pigs, the invasion of the Dominican Republic, the secret airwar in Cambodia, and the "destabilization" of the elected government of Chile—on the analogy of the Soviet "cultural presence" in Afghanistan?

This kind of stacking of the deck may go down well in the American academy—and judging from the chorus of influential admirers quoted on the dust-jacket it certainly does. But I should like to think that European readers will be more sensitive to the sophisticated forms which the academic rhetoric of the new cold war is now assuming; that they will not be inclined to trade one black-and-white worldview for another, and will in turn have a larger understanding of that true intellectual disinterestedness which Professor Hollander desiderates but fails to exemplify; and that they will be able to benefit from what is permanently valuable in this book—its reminder of intellectuals' persistent impulse to over-idealize distant revolutions of which they know very little—while rejecting its underlying morality and, yes, its cynicism.

Iain Wright is a fellow of Queens' College, Cambridge.

Great Leaps?

Mandarin Ducks and Butterflies: popular fiction in early twentieth-century Chinese cities by Perry Link University of California Press, £19.50 ISBN 0 520 04111 9

China's intellectuals: advise and dissent by Merle Goldman Harvard University Press, £14.00 ISBN 0 674 11970 3

The intellectual history of early twentieth-century China is dominated by the May Fourth Movement, named after the date in 1919 when a student demonstration against corrupt government and imperialism marked the beginning of a period of cultural revolution for the sake of national salvation. Contemporary with this movement of the westernizing literary elite was a much less well-known burgeoning of popular fiction in Shanghai and other expanding cities of eastern China. This fiction was ridiculed by members of the May Fourth Movement as "Mandarin Duck and Butterfly" school because of its plentiful use of these traditional symbols for pairs of lovers. The authors of this literature were, generally, more "old-fashioned people, who continued to wear long gowns and to admire the tradition of living five generations under one roof. Some of them played at being eccentric geniuses, like Hsiang K'ai-jin, who smoked opium and shared a tiny apartment in a Shanghai backstreet called 'Elegance Alley' with his mistress, a dog, and a monkey.

Professor Link's book explores the development of this literature between 1910 and 1930. The main themes are love, knight-errantry, swordplay, and crime-detection. All four types of story had deep roots in traditional China, but western influence was also evident. A fresh interest in love stories had been stimulated by translations from European novels such as *Dame*

aux Camélias, which had appeared in large numbers in the late Ch'ing period. Western mores also fathered new plots: a common theme was the triangle of boy trying to choose between brash westernized girl and modest traditional one. The relative merits of free and arranged marriages were also fictionally explored, and the new detective stories were much influenced by translations of Sherlock Holmes.

The expensive small-circulation novels in classical style of the 1910s gave way in the next decade to cheap mass-circulation works in the vernacular language, whose popularity was further increased by adaptation for stage and screen. Professor Link shows how this rapid development was facilitated by improved printing technology and commercial enterprise. At the same time it satisfied the growing needs of a newly urbanized populace, which now not only had the weekend leisure time to devote to such reading, but also needed the comfort of sharing with fictional characters the stresses and strains of their unfamiliar environment and life-styles.

In *China's Intellectuals* the heroes are the heirs of the May Fourth Movement, and indeed some of the liberal intellectuals featured in this account of dissidence in the 1950s and 1970s had been active participants in that movement. Professor Goldman's story begins in the aftermath of the economic disaster of the Great Leap Forward of 1958. It shows how the regime's need to encourage intellectuals to work for the benefit of the state was in conflict with its need to insist on orthodoxy, and how this contradiction inevitably resulted in a pattern of alternating relaxation and repression. During this period intellectuals were sometimes able to profit from factional struggles to gain a hearing for dissenting views, depending for their impunity on the protection of powerful political patrons.

Professor Goldman sees these intellectuals as direct descendants of the group of dissidents in traditional China who gave voice to the Confucian literary responsibility of criticizing the government in times of crisis. Their method of criticism was the traditional device of writing essays, plays, and so on, describing analogous historical events. Thus one of the earliest expressions of dis-



In "The Modern Ballet of the Revolution" a girl soldier kills a traitor.

chantment with Mao's Great Leap Forward was a vernacular translation of a Ming Dynasty memorial, published in the *People's Daily* by the historian Wu Han. It was entitled *Hai Jui scolds the Emperor*, and the emperor showed an unmistakable resemblance to Chairman Mao.

The peak of repression was, of course, Mao's own Cultural Revolution, which started with the public criticism of the play *The Damnable of Hai Jui*, in which Wu Han had used T'eh-shui, who had been dismissed for outspoken criticism of the Great Leap Forward. The Cultural Revolution was a determined effort to stamp out both traditional and May Fourth culture, so that bookshops stocked little but the sayings of Chairman Mao and the stage was dominated by his wife's revolutionary operas.

When China stopped back from the brink of the resultant chaos, Mao's last years were marked by

media campaigns desperately mounted by Madame Mao and her cronies to try to retain the ideological initiative against the reviving strength of veteran bureaucrats like Chou En-lai; and we must be particularly grateful to Professor Goldman for steering us skilfully through the hazards of the Anti-Confucian and *Water Margin* campaigns, in which it became increasingly difficult to understand which historical figure was an analogue for whom.

Mandarin Ducks and Butterflies is a thoroughly researched book which enriches our understanding of early twentieth-century urban life in China. I would have found it more satisfying, if it had unfolded the story chronologically, as does Professor Goldman's authoritative and well-presented account of a most complicated and esoteric subject.

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BOOKS

'And I have my George'

Buckingham: the life and political career of George Villiers, first duke of Buckingham by Roger Lockyer Longman, £14.95 ISBN 0 582 50296 9

Every schoolboy—and every schoolgirl too—now knows what used to be carefully concealed from generations of their predecessors: that it is fruitless to study the complex political history of the reign of James I without reference to the king's passion for beautiful young men. Indeed, it is astonishing that until now there has been no scholarly biography of either of James's successive great loves, Robert Carr, earl of Somerset, or George Villiers, duke of Buckingham. The second and greater of these deficiencies has now at last been made good by Mr Lockyer's splendid new book.

One significant difference between the two favourites is that while Carr's rise to favour preceded his being manipulated by the Howard clique into which he was subsequently drawn by marriage, Villiers rose as chosen instrument of the Howards' enemies at court and the means of displacing them from power. Nevertheless while Carr lacked the independence or ability to be much more than a pliant tool of the Howards, Villiers was quick to demonstrate that he had no intention of being mere clay in the hands of his backers. While the favourite's independence will come as no surprise to students of the period, Mr Lockyer's closely reasoned defence of his much-maligned foreign policy and his demonstration of the energy, drive and, most surprisingly, grasp of administrative detail which he brought to his exercise of the office of Lord Admiral are something of a revelation.

Buckingham might shake himself free of his backers, but he was totally dependent on his two royal masters. It is one thing to assert that James doted on him—"Christ had his John and I have my George"—and resisted all intrigues to insinuate other young men into his favour, including one whose face was daily washed with posset curd. But it is quite another to see the king as dominated by his favourite in affairs of state, as many contemporaries and subsequent historians have done. In fact nothing enabled Buckingham to retain his hold on power more than his clear recognition of the danger of overstepping its limits. Nor is his Spanish expedition along with the Prince of Wales in 1623 an exception to this rule, even though it was undertaken against the better judgment of the king. While it may be true that Buckingham was beginning at this time to look towards the rising, and away from the setting, sun, he acted in Spain as the faithful interpreter of James's policies, sometimes against the inclination of the editors and indeed the ambassador Bristol and, indeed, the verdict of subsequent historians, at least until Mr Lockyer. Moreover, it is most unlikely that the idea for this princely quest for the Infanta's hand had its origins in the mind of the favourite, who in fact stood to lose a good deal from the opportunities afforded to his many enemies by his prolonged absence from court.

The author diffidently offers an interesting suggestion that one product of Buckingham's Spanish experience may have been his realization of how great the power of a favourite might be in circumstances when the king was a *roi fainéant* like Philip IV and the favourite a dominant and supremely able statesman like Olivares. Did he return from Spain with enhanced ambitions as a result of this revelation? It is significant that the section of the book

entitled "Buckingham in Power" begins in 1625, not in 1618, or 1620. For James was anything but a *roi fainéant*, and there is certainly no foundation in the rumour, assiduously fostered by the Spanish ambassadors, that the prince and duke planned to shut him up in Theobalds and take over the government of the realm themselves. Although they successfully challenged James's policies over relations with Spain and the attack on Lord Treasurer Middlesex, it was the prince not the duke who led the way, and it was not for nothing that the Parliament of 1624 became popularly known as the Prince's Parliament. While Charles was clearly a less dominant king than his father, the favourite's continued need to toe a new somewhat less clearly drawn line is demonstrated in such matters as his movement towards Laud and the Arminians in defiance of the wishes of his erstwhile puritan associates. It was clearly prudent to conform to the king's own clearly expressed preferences in such matters.

One indication of Buckingham's vulnerability and consequent total dependence on his royal masters is his successive bids to win popular acclaim and revive his periodically plummeting popular reputation: by

When all was light

The Enlightenment in National Context edited by Roy Porter and Mikuláš Teich Cambridge University Press, £19.50 and £6.95 ISBN 0 521 23757 2 and 28212 8

When professor of modern history, Herbert Butterfield's enthusiasm for the impact of the *philosophes* on European Enlightenment had all the appeal of a Cambridge comet trailing its influence far and wide. Comets have a way of reappearing, and in the steady flow of Roy Porter and Mikuláš Teich this one is particularly spectacular for an arc which spans 13 different states as the Enlightenment comes under scrutiny from different national perspectives. With the firm intention both of widening the French base, and of keeping assessment of its incidence in rival nations as provocative as possible, the editors have by the ideal of the seminar which first prompted these papers. They also allow the widest impact without imposing the dull uniformity of contrived synthesis.

Roy Porter's brilliantly provoking piece seeks to determine "why the English Enlightenment is a scholarly black-hole". English thinkers, after all, were neither materialists nor democrats nor yet anarchists, so they could not possibly be enlightened. "From liberty, equality and the rights of man," wailed Hannah More, "good Lord deliver us!" Yet arguably the English Enlightenment (and not the Dissent of Methodism or indeed *Mis France*) protected England from the French.

Nicholas Phillipson follows with a most trenchant analysis of the role of Fletcher, Hume, Smith and Ferguson in raising up a new Athens on Scottish soil. For the unique contribution of the Scots to the philosophy of Enlightenment was a fresh grasp of civic virtue and a well-nigh "sociological" understanding of the science of man—Hume's principles of self-criticism paving the way to good and acceptable living despite his notorious reputation for religious scepticism in the land where *modus vivendi* with the Kirk was a *sine qua non*.

Defining its ideology as "less a body of doctrine than a number of shared premises from which men of different temperaments, placed in different situations, drew quite radically different conclusions", Norman Hampson treats of France, that *font origo* of Enlightenment. Advancing precise argument in literary language altogether becoming his subject, Professor Hampson emphasizes the moderate message that lay behind aggressive, pungent outbursts of a Voltaire "who preferred his guests not to discuss the non-existence of God in front of the servants", and a

turning on the patentees in 1621; by siding with the supporters of a breach with Spain in 1624, which caused him to be hailed as the saviour of his country by the same persons who were to revile him as the grievance of grievances two years later; by seeking to emulate Elizabeth's Essex at Cadiz in 1625, though he did not go there in person; and by campaigning as the Protestant champion of the beleaguered Huguenots at La Rochelle in 1627 and again in 1628, when he was assassinated while preparing a second expedition. If some of these exploits ended in total disaster, the fault should not be laid wholly at Buckingham's door. As Mr Lockyer is at pains to emphasize, "there was not a great deal wrong with Buckingham's foreign policies, other than the lack of money with which to carry them into effect"; a verdict which alone is sufficient to characterize his admirable book as a formidable addition to the armoury of the historical revisionists.

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Rousseau who penned the largely innocuous *Emile* as well as the prescribed *Discours social*. The fact that Frenchmen strove to enshrine ideology in the practice of politics was of course crucial. Yet the uniqueness of France "was not the relationship between 'us' and events but the exceptional nature of both". Simon Schama describes the "functional utility of [Dutch] culture for the cause of the *philosophes*", a culture few Frenchmen came to appreciate because of a guttural language barrier that seemed as unrefined as their diet of fish, roots and cheese. After all, as Belle van Zuylen was acutely aware, to live on a "muckade floating in the North Sea" was merely to exist on the periphery of Europe's intellectual society. If parochialism was thus the "motive force of reform in the Netherlands", the Cantons of Switzerland, hitherto just as isolated, returned to Europe during the Enlightenment, a Europe Samuel S. B. Taylor seems to think they abandoned "with the demise of the great Reformation universities". For Professor Taylor evidently finds Calvinist faith and intellectualism incompatible; and that there was in this period a marked retreat from the bastions of dogma to congenial citadels of rational theology is incontrovertible, at least in so far as most protestants had come to abandon Bible-based deductive intellectualism in favour of an epistemology more in keeping with Newtonian induction and the experimental method. That "inexhaustible experimenter" and founding father of the biological sciences, Charles Bonnet, arguably made his mark on the divine because of a Christian commitment few could fault.

If the Swiss ethos of Enlightenment was thus both Protestant and liberal, the traveller visiting Italy entered, in Owen Chadwick's careful phrase, "an unfamiliar Catholic country". Yet however much the states of the remote peninsula might learn from outside (especially from France and England, but also from Scotland and Spain), Professor Chadwick makes it clear that something about the Italian Enlightenment "could not but be religious", a concentrated focus on personalities amply illustrating his point. Although beyond reproach in terms of priestly commitment, Genovese thus attacked both Pope and canon law to gain recognition as a harbinger of *Risorgimento*. Filangieri's *Scienza* received condemnation from the Inquisition; and Fernando Galiani played an unrivalled part as the sole Italian who achieved a European-wide reputation as an economist of the Enlightenment. It was of course Galiani who provided Voltaire with the much-relished judgment he once afforded the King of Prussia—namely that "Rome will never recover its splendour until it has an atheist Pope".

As with Switzerland and Italy careful distinction between the stance of Protestant and Catholic alone makes it possible to grasp the complex nature of the German *Aufklärung*. This is the high-wire act performed by Joachim Whaley and T. C. W. Blanning, whose lucid and brilliant exposition dispels much basic misunderstanding about the nature and extent of the phenomenon of Enlightenment in an ideologically divided Germany. In short, religious education was social education, however much Voltaire preferred the hostile assessment of professed regulars whose threefold vows made their contribution to society consist in singing, eating and digesting! *Aufklärung* admittedly had its literary and philosophical dimensions, but it was above all a practical concern with political and social reality that motivated *cognoscere*. And as Ernst Wangermann argues, the same kind of developments transformed Austria.

Against the dark devastation of the Thirty Years' War, the dawn of Enlightenment in Bohemia has an almost apocalyptic quality. But sane qualification from Mikuláš Teich (Joint editor of the whole volume) provides a most scholarly study emphasizing the links with Austria that promoted toleration despite determined opposition from the Jesuits. Yet granted noble intransigence, the intractable problem of serfdom remained to impede proper progress from "darkness to light", despite impressive intellectual advance in the rise of organized science originating with the "Private Learned Society" (1774). In the context of disbanding the Jesuits, 1773, it seemed to university men of Pele's calibre that the spirit of Jan Hus had triumphed after all.

Three further essays, by Tore Frängsmyr on Sweden, Paul Dukas on Russia and Jack Pole on America complete this valuable collection of Enlightenment essays. In the words of co-editor Mikuláš Teich, such varied contributions provide "not a synthesis but varying approaches to a common theme". Certainly the stimulating seminar is so singular an event that it should endure in print, if only to allow scholars the delight of sifting learned apparatus at leisure. Thanks to the selfless labours of Dr Porter, Dr Teich and their colleagues, this proved possible, and a Cambridge faculty occasion has been preserved for posterity.

There is an obvious parallel between the structure of the trilogy and that of Braudel's *Mediterranean*, also divided into three parts. Marx was a binary thinker, but Braudel prefers to think in threes. In the case of both his major works, the first and most original section deals with structures which, if not static, move extremely slowly. The eight chapters of the volume under review deal in turn with population, food, clothes, houses, sources of energy, transport, money and towns.

Although this type of approach had been employed before at a local or national level, Braudel's book, like Voltaire's, caused quite a sensation when it first appeared. In 1981 it is easier to understand what he was trying to do, and also to criticize him for taking so little account of approaches parallel to his own, pursued by archaeologists and anthropologists.

Peter Newman Brooks is lecturer in ecclesiastical history in the University of Cambridge.

Extending frontiers

Civilization and Capitalism, 15th-18th Century volume one: The Structures of Everyday Life by Fernand Braudel Collins, £15.00 ISBN 0 00 216303 9

One of the most remarkable historical works of the eighteenth century was Voltaire's *Essays on Manners*, published in 1756. The idea of writing a social and cultural history of Europe from Charlemagne to Louis XIV was unusual enough in itself, but Voltaire also surprised his readers by beginning the book with an account of ethnocentrism and place Europe in a wider context. Braudel's essay (first published in 1967, and translated in 1973), resembles Voltaire's in a number of respects, from the concern with the history of food and clothes to the comparisons and contrasts between Europe and China. But Braudel's feet are planted much more firmly on the ground.

What he has written is an exciting and original introduction to the economic history of early modern Europe. It liberates the reader from traditional approaches to economic history, which Braudel finds too restricting chronologically, geographically and thematically. In terms of chronology, the volume exemplifies Braudel's well-known interest in *la longue durée*. Officially concerned

with four centuries, from the fifteenth to the eighteenth, it in fact spills over at both ends. And as for geographical boundaries, the volume is another illustration of Braudel's "global" approach. When his subject was the Mediterranean, vast enough in itself to draw most historians, he still felt the need to extend his frontiers to the Atlantic and Sahara. In the present volume, planned (about 1950) as a study of Europe, he extends himself to the entire world. One of his central arguments concerns the impossibility of explaining the major changes in other than global terms. Population movements, for example, were in step in Europe and Asia from the sixteenth century (if not before), and a worldwide phenomenon requires a worldwide explanation.

In subject matter, as in chronology and geography, Braudel bursts through the barriers of conventional economic history. He sweeps away the traditional categories of "agriculture", "trade" and "industry", and instead looks at economic history as a three-storey house. On the ground floor—his metaphor is not far removed from Marx's "base"—is *civilization matérielle*, defined as "repeated actions, empirical processes, old methods and solutions handed down from time immemorial". On the next floor, there is *vie économique*: "calculated, articulate, emerging as a system of rules and almost natural necessities". At the top there is, most sophisticated of all, the "capitalist mechanism". To each of these three storeys corresponds one volume of the trilogy published in 1979, *Civilisation matérielle, économie et capitalisme*.

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Peter Burke is a fellow of Emmanuel College, Cambridge.

BOOKS

Belief in poetry

Yeats, Eliot and R. S. Thomas: riding the echo by A. E. Dyson Macmillan, £15.00 ISBN 0 333 13027 8

Mr Dyson's avowed aim in this book is to show that the major poetry of Yeats, Eliot, and R. S. Thomas constitutes a distinctive twentieth-century type of religious poetry; a poetry not of dogma, but of religious searching and speculation, the greatness of which lies precisely in its openness and lack of simple resolution.

This method is, he says, "to proceed mainly by way of practical criticism" and the book consists of very detailed analyses of fifty of Yeats's most famous poems, a close study of Eliot's *Four Quartets*, and, in a short concluding chapter, readings of a selection of R. S. Thomas's highly individual religious lyrics. In these analyses he concentrates on poetry as language to be read aloud, and reading as hearing the echoes of traditional themes.

This is a subject of the greatest complexity. It raises questions about the nature of religious experience and belief, the significance of dogma, and the relationship between the language of poetry and the power of religious vision. It poses also the most profound problems of referentiality: does such poetry illumine metaphysical reality, or express the depths of subjective being; or is it perpetuating the last dreams produced by the opium of the people? Does this verse demonstrate the supreme power of poetry to reveal truth or to create illusion? None of these questions is explored adequately in this book.

To begin with, the thesis and the method are not compatible. Mr Dyson evidently believes that to point to the complexity, openness, and contradictory character of this poetry is quite sufficient to prove his point about the nature of its religious significance. But this is not the case. More theoretical rigour, more cogent arguing, and greater expertise in twentieth-century religious thought would be needed to do real justice to his interesting but highly contentious claim.

Passing references to Rudolf Otto's *The Idea of the Holy* and C. J. Jung's *Memories, Dreams, and Reflections* and *Modern Man in Search of a Soul* are hardly sufficient. Serious treatment of the subject would require a much more sustained study of Otto, or of Kierkegaard, or of Jung's substantial writing on the nature of religious consciousness.

Indeed, from a Jungian point of view, it is arguable that the fundamental distinction in Mr Dyson's argument is quite inadequate, if not actually misleading. To suggest that there is a simple opposition between "dogma" and "endless exploration" is quite mistaken and hardly does justice to either the work of Jung or the poetry of Eliot and R. S. Thomas. Mr Dyson writes as if dogma were something believed by an imbecile. Jung did not reject dogma or underestimate its force; indeed his life's work could be seen as an attempt to understand its persistent power. In the second of the three *Terza Lectures* Jung delivered at Yale in 1937 on "Dogma and Nature Symbol", Jung argues that although twentieth-century man has consciously rejected "dogmas", they persist all the more powerfully in the unconscious and are the very source of his most profound thinking. Contrasting its force with that of esoteric theory he argues:

"Dogma" lasts untold for centuries. It expresses the psyche more completely than the scientific theory, for the latter gives expression to and formulates the conscious mind alone. Furthermore, a theory can do nothing except formulate a living thing in abstract terms. Dogma, on the other hand, simply expresses the living processes of the unconscious in

the form of the drama of repentance, sacrifice, and redemption. Looked at from this Jungian point of view, the whole of Mr Dyson's argument is back to front: it is the intense engagement with dogma as *dogma* which makes the conscious explorations of human experience in Eliot and Thomas so profound.

Much more could also be made of Rudolf Otto's conception of the "numinous" in *The Idea of the Holy*. Dr Dyson suggests that the concept is useful in understanding poems like "Sailing to Byzantium", "Byzantium" and *The Four Quartets*. And yet in the end he makes little of this and misses a fine opportunity to explore the nature of the numinous in the power of poetic language. On the one hand, his own critical writing on these poems by Yeats conveys very little of their extraordinary force; on the other, he makes no mention of some poems which yearn for just such an approach, in particular the "Supernatural Poems" from *A Full Moon in March*. Here, if anywhere, we have in language the overwhelming power of the numinous as the soul is brought before God:

At stroke of midnight soul cannot endure
A bodily or mental furniture.
What can she take until her Master give!
Where can she look until He make the show!
How can she know until He bid her know!
How can she live till in her blood He live!

No wonder Ribb tells us: "Thought is a garment and the soul's a bride." That cannot in that trash and tinsel hide.
One must say, however, that the book often loses sight of its avowed theme, and becomes in effect a very close study of many individual poems. Here Mr Dyson is on firmer ground. At his best his readings are highly engaged, speculative, and suggestive, and one can imagine them forming the basis of lively seminar discussions. His insistence on the problems of interpreting poems like Yeats's "A Prayer for my Daughter" or "Among School Children" is salutary. His claim that "Little Gidding" is tentative and exploratory rather than dogmatically Christian is refreshing. His attempt to speak positively about the much maligned music of "The Dry Salvages" is welcome. And his close engagement with the paradoxical images of God in Thomas's religious poetry of the seventies is very gripping. The short concluding section on Thomas is, in fact, the most original and compelling part of the book. He might have considered here Jung's exploration of just such paradoxes in *Answer to Job*.

Unfortunately, the book as a whole is not sustained at this high level. Too often practical criticism becomes chaotic, low-keyed speculation about probable intentions and possible meanings. At its worst, it falls off into being a record of merely personal likes and dislikes. Confronted with the Soul's assertion in "Dialogue of Self and Soul":

Such fulfollness in that quarter
And falls into the basin of the mind
That man is stricken deaf and dumb and blind.

For intellect no longer knoweth
Is from the Ought, or Knoweth from the Known -
That is to say, ascends to Heaven;
Only the dead can be forgiven;
But when I think of that my tongue's a stone,
Do nothing, but doodle mentally
around this." And, alas, how much of the book consists of just that.

Why does this particular kind of practical criticism so often limit itself in this way? For two reasons perhaps. First, Mr Dyson believes that no criticism can ever do justice to the full meaning and significance of poetry. From beginning to end he asserts that reading poetry aloud, and hearing it read aloud, is the most meaningful, and in a sense, final act of criticism. Speaking of the final section of "Burnt Norton" he asserts:

I have repeatedly urged reading the poem aloud as the best exercise, and here the sound of old themes, rearranging themselves, is almost the whole effect.

This is followed by:

What then can the critic do? Point to this and that? - not trying to

explain, except maybe in question-plain terms about their own interests in plain speech. The results are predictable: Yeats and Dylan Thomas are condemned, and Hardy - like Edward Thomas - is extolled for a "lack of pretension". (Sisson might have praised MacNeice for the same reason, but only mentions him once, and in passing. When will MacNeice get the attention he deserves?)

There is a good deal to be said for Sisson's concentration on colloquial language and his impatience with "literary nonsense": it rescues a number of writers, Edward Thomas pre-eminently, from the neglect in which they used to languish. But because Sisson is wary of what he considers to be the unacceptable face of academic study, several other important general issues are virtually ignored. By selecting Hardy and Edward Thomas for special praise, he identifies a tradition which has become usual to describe as "the English line" - though his dislike of writers who create their own literary groupings, and of critics who do it for them, prevents him from mentioning it. "It is a mistake," he insists, "to attach too much importance to announced literary movements. The proof of the pudding is in the eating, not in the menu. A disclaimer of the English line would have done more than simply give coherence to a discernible and sustained development - it would have meant that Sisson also had to say something about modernism. (Except when he quotes the title of a book by Robert Graves, he does not use the word at all.)

As it is Sisson rightly credits Eliot and Pound with a concern for plain language "charged with meaning to the utmost possible degree", without commenting in detail on the immense differences between their own work and the tradition Edward Thomas were knowingly following, Eliot and Pound were deliberately cosmopolitan, urban, and formally disruptive. To play down these differences is to misrepresent the scale and the effect of the poetic revolution which occurred during the early years of this century, and to overlook the fact that for several recent English writers the assimilation - or otherwise - of modernism has been a matter of central concern. The modernists, as Basil Bunting said of Pound's *Cantos*, are like the Alps; "you will have to go a long way round if you want to avoid them."

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simply because he takes them seriously, believing that the choice of incident and image has something important to tell us about the artist's mind.

It would be no compliment to the author if a book as wide-ranging as this provoked no dissent. I found myself questioning Donington's emphasis in several key areas. It seems odd, for example, that in discussing the pastoral drama he concentrates almost exclusively on the Neoplatonic and mythological aspects of the subject while neglecting its associations with "that Golden Age when music was natural and speech like poetry". I was initially surprised and I remain unconvinced to find the author distinguishing "modulation and monody" as the technical prerequisites for opera - and his case here is not helped by an uncharacteristically cursory and cryptic explanation of modulation. It would seem more plausible not to isolate modulation in this way, but to underline monody's dependence on all the expressive resources - harmonic, rhythmic and dactylic - acquired over 50 years of madrigal composition.

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So, alas, was some of the worst. Certainly under Carvalho the theatre could boast first performances of Gounod's *Faust*, *Mireille* and *Roméo et Juliette* (the latter a much under-rated work, though not by Dr Walsh, at whose Wexford Festival I remember a delightful performance).

Each had its strict conventions, but these excluded at least as much of worth as they admitted; and it was the frustration of some of France's most important composers, among them Ambroise Thomas, Adolphe Adam and Bizet himself, stormy petrel of the turbulent Paris landscape, that led to the demand for a third theatre. Here, as Dr Walsh puts it, "young and unperformed composers and librettists might, like poor expectant souls, at least find a purgatory which in time would admit them to the paradise of the Opéra and Opéra-Comique."

Dr Walsh says little to praise or condemn, for his method is to recount the crammed history of the theatre chiefly by means of contemporary accounts and press criticisms (Berlioz prominent among them). But the tale is often a sorry one, with the appalling Castil-Blaze dismembering Weber's works for his own profit ("Castil-Blague", Rossini called him, and Berlioz declared that compared with his crimes, it seemed wrong that a miserable sailor got fifty lashes). Others were quick to leap on this sorry bandwagon of Carvalho's, so that audiences were rarely treated with a *Fidelio* in which Barbier and Carré (better known for their work with Gounod and Thomas librettos) had "enriched the dialogue in some details and given other names to the principal characters". In fact, they moved the action to the plottings of the Sforza family at the end of the fifteenth century, turning Leonore into Isabella of Aragon. One of the book's smudgily reproduced pictures shows the dungeon scene. It is not uplifting.

Together with the major works which the theatre had to its credit, and the translations of foreign operas that helped to bring new life into the stuffy Paris scene, went an extraordinary procession of minor works. Who now has ever seen operas by Clapisson, Doffes, Gautier, Semet or

Caspers? They were some of the more frequently welcomed figures in a list of 118 operas by some hundred composers. Dr Walsh lists them all, in his admirable appendices of casts, librettists, composers and other matters. It is the compilation of an enthusiast and collector with a voracious appetite for detail and a great care for accuracy.

Only rarely does he seem to slip up. It is a little hard to suggest that Félicien David became schizoid because of his Saint-Simonian and his Eastern travels; and to credit Berlioz with acquiring his knowledge of Shakespeare from Harriet Smithson is to confuse cause and effect. Though he writes fluently, he has imprisoned himself in the stylistic eccentricity of referring to events lying ahead of his narrative in the non-tense "would": "The 1864-65 season would demonstrate" (for "demonstrated"). "considerable more activity on Carvalho's part, but neither artistically nor financially would it be" ("was it") "any more rewarding."

But it is a vivid account, especially in one or two eye-witness reminiscences of scenes that evoke the whole world of *Les Enfants du paradis*. The theatre died in the smoke of the battles of the Commune; indeed, it provided some of the smoke, for an unlucky shell set it on fire in May 1871. Perhaps, with its old sense of somewhat hammy timing, it knew the moment had come; for an era was certainly over.

John Warrack

John Warrack's edition of *Carl Maria von Weber's "Writings on Music"* has just been published.



"Pietà", a lithograph from 1903, shows Käthe Kollwitz's characteristic compassion for the suffering of the working-class people who were her subjects. A collection of her work has been published under the title *Käthe Kollwitz: graphics, posters, drawings* (Writers and Readers, £15.95 and £7.95).

In plain language

English Poetry 1900-1950: an assessment by C. H. Sisson Carcanet Press and Methuen, £9.95 and £3.50 ISBN 0 85635 393 0 and 416 32100 3

English Poetry 1900-1950 was first published ten years ago, and is reissued now with a new postscript. This does not attempt to bring the book up to date; it simply praises a handful of recent poets who practice what Sisson has always preached. Brian Higgins, Cliff Ashby and David Wright, he feels, have managed to combine an unassertive learnedness with a "general, completely unartificial" conversational tone; he regards them as the defenders of a poetic faith which has been slowly and sometimes painfully evolved through-out the first half of this century.

Sisson obviously believes that the virtues of a plain and modest style have been undervalued in recent years, and this is no doubt largely why he has reissued the book. It is a heartfelt defence of the moderate, the authentic and the unostentatious against the ravages of certain unnamed literary personalities, and the demands of the media:

In a world given over as never before to the loud and tarty... the voice which is speaking because it has something to say will not be among the loudest. It might almost be said that, in the second half of the twentieth century, unmarked that something is being said which should be attended to.

The zest and intensity of Sisson's dislike of trendiness. But so does its every welcome swipe at pretension (in Yeats, for example); there is a remark which seems - for all its intended briskness - merely tasty. His judgment of the young writers of the thirties is characteristic: "There is something hopelessly juvenile about the little group of Wystan, Stephen, Christopher and Cecil at this epoch. For intellectuals in the way of political-literary movement they are boobies."

This kind of outburst causes comparatively minor irritation, but it is indicative of an important quality in Sisson's attitude and intention. As he seeks to "make the outline of history clear by exploring ways in which various twentieth-century writers have re-established a link between verse and the language that is spoken", he avoids any critical rebarbore. All the century's major poets, and some minor ones, are put in the book, and questioned in

plain terms about their own interests in plain speech. The results are predictable: Yeats and Dylan Thomas are condemned, and Hardy - like Edward Thomas - is extolled for a "lack of pretension". (Sisson might have praised MacNeice for the same reason, but only mentions him once, and in passing. When will MacNeice get the attention he deserves?)

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John Warrack's edition of *Carl Maria von Weber's "Writings on Music"* has just been published.

Books

Words and music

The Rise of Opera by Robert Donington Faber, £15.00 ISBN 0 571 11674 4

Professor Donington has written another distinguished and idiosyncratic book. His subject is "how and why opera arose when it did", and what he calls his counter-subject, "how opera works, since the nature of opera was certainly implicit in its origins". The story is taken up to Alessandro Scarlatti in Italy, and in France to the establishment of the *tragédie lyrique* by Lully and Quinault.

The hows and whys that I have quoted are the clue to the book's distinctiveness: it is not a mere descriptive history, but an attempt to understand the ideas that inspired and the presuppositions that conditioned the work of the first poets and composers of opera. Specifically Donington aims to show first, the fundamental importance of Neoplatonic aesthetics to the emergence of the new art-form, and second, (it will surprise no one familiar with his Wagner's *Ring* and *Its Symbols*) the extent to which the success of opera is dependent upon its providing mythological or quasi-mythological archetypes which are apprehended largely intuitively by the watching and listening audience.

It is not, it must be said, a book for beginners. Much is assumed: that the reader will be familiar with the general outlines of early operatic history, with the characteristics of such forms as the ballet de cour, the intermedium and the masque, and with all the technical terminology of late Renaissance music. But for the reader who does know roughly what happened, Donington's zealous investigation into the hows and whys of it all will be endlessly fascinating, inspiring and exasperating by turn. He is one of the few writers on music who is not afraid of getting to grips with big ideas, of diving into deep waters, and whose erudition in matters literary, philosophical, and psychological seems hardly less than it is in matters musical. If he occasionally founders, how much more interesting and educative the whole endeavour is than the sterile musicological perfection of those scholars who appear not to realize that there are such things as deep waters.

No doubt many "plain musicians" will find the book unduly discursive. Is it really necessary, one wonders, to subject the reader to an elaborate Neoplatonic analysis of a work so remotely related to opera as Giovanni Battista Gini's intermezzo for *Le Cofanario*; or do we really need to know about the multitudinous interpretations of the Circe myth recorded by Natale Conti? I can only say that, more often than not, I was persuaded; that after the digression one returns enlightened to the main theme. This is thanks in no small measure to the author's gift for producing copious summaries which tie together the abstruse ramifications of his theme. And in a way Donington might claim that these digressions are his theme, for like a good Neoplatonist himself, he is concerned less with describing the superficialities of music history than with unveiling the world of ideas from which opera sprang.

The book has many merits. Its sections of comparatively straightforward history, such as the chapter on French opera, are clear and judicious. The author's generosity of spirit helps him to discuss controversial issues - such as the rival claims of Peri and Cavalleri to be the composer of the first opera - with admirable fair-mindedness. The description of musical styles and techniques is beautifully done. Many of the book's merits may be attributed to the special cast of Donington's mind. To take something apparently trivial, his art of telling the stories of the operas and other works he discusses is far superior to that of a conventional historian of opera such as Dent,

simply because he takes them seriously, believing that the choice of incident and image has something important to tell us about the artist's mind.

It would be no compliment to the author if a book as wide-ranging as this provoked no dissent. I found myself questioning Donington's emphasis in several key areas. It seems odd, for example, that in discussing the pastoral drama he concentrates almost exclusively on the Neoplatonic and mythological aspects of the subject while neglecting its associations with "that Golden Age when music was natural and speech like poetry". I was initially surprised and I remain unconvinced to find the author distinguishing "modulation and monody" as the technical prerequisites for opera - and his case here is not helped by an uncharacteristically cursory and cryptic explanation of modulation. It would seem more plausible not to isolate modulation in this way, but to underline monody's dependence on all the expressive resources - harmonic, rhythmic and dactylic - acquired over 50 years of madrigal composition.

Later in the book I felt Donington was falling into the trap of viewing "opera" as a normative, central and clearly-defined form and such pieces as the moralities of Cavalleri and Agazzari, and Monteverdi's *Ballio dell'Ingrate* and *Combattimento di Tancredi e Clorinda* as atypical satellites. Were there such things as "normal operas" in the early decades of the seventeenth century?

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BOOKS

Ex nihilo

The Creation by P. W. Atkins
Freeman, £5.95
ISBN 0 7167 1350 0
Divine and Contingent Order by Thomas F. Torrance
Oxford University Press, £9.50
ISBN 0 19 826658 8

These books about cosmology make an amusing and striking contrast. P. W. Atkins is an Oxford physical chemist who has written a prose poem with notes, expounding a visionary naturalism in the tradition of Lucretius. He describes his work as an essay in extreme reductionism and militant rationalism. Complete knowledge is within our grasp. Science can explain everything, including even the coming into existence of nothing of the Universe itself, by chance. All complexity is being reduced to the utmost simplicity, and fundamental science may be completed within a generation.

The main argument is directed against the idea of a Creator, and goes as follows; nature is very economical, and we increasingly understand how complex things emerge from the simplest beginnings. Suppose then that there is a Creator, but that he is lazy. Just how lazy can he be? Need he make men? No, it is enough for him to make competing self-replicating molecules, and they will surely in time evolve into men. Need he then make those molecules? No, not if he is really lazy. He need only make the fundamental particles at high energy; as the Universe slowly uncoils and winds down, complex molecules will eventually appear where conditions are right. Does he then need to set up the initial singularity, the big bang? No, not even that, for it is possible for theory to probe behind the first moment of creation. The basic particles and forces can be reduced to little knots or waves in the fabric of spacetime, and spacetime can in turn itself be explained as having emerged by the chance assemblage into a relatively stable dimensionality of a primordial dust of unstructured points. And those points? Atkins, losing me, tries to generate them *ex nihilo*. The upshot is that an infinitely lazy Creator need not do anything at all, and so may vanish completely. All is explained.

Critics will doubtless fasten on the last and most visionary stages in the argument, and no doubt this is in many ways an over-bold and heterodox book. Yet it has about it a touch of the extraordinary. Many a respectable and worthy tome receives laudatory reviews, and is speedily forgotten because it has failed to stimulate the reader's mind. This book will not be forgotten by anyone who has read it.

The author's spirituality is resolutely scientific-rationalist and objective. Individual human beings are transient and unimportant, and their life-problems of no interest. One who alone is interesting, that in the cosmic process barely understands itself. Atkins also thinks science can deliver the kind of complete vision of reality that Spinoza sought through rationalist metaphysics. This commits him to thoroughgoing realism about the status of scientific knowledge. I suppose that like many scientists he is unimpressed by metaphysics, and would retort that his own vision is at least far better founded than Spinoza's. Yet a philosopher may be forgiven for wondering how physics can thus be turned into metaphysics.

Torrance shares Atkins's realism about science. He is a neo-orthodox dogmatic theologian in the Reformed or Calvinist tradition who likes to talk about "theological science and natural science." Being a dogmatist and a realist, he rejects Mach's type of philosophy of science in the same way as he rejects Bullman's critical approach to theology. His main thesis is familiar from writers such as E. L. Mascall, S. L. Jaki

and R. Hooykaas: the Christian doctrine of Creation is the old loving nurse of modern science. Both modern science and philosophical theism are Christian rather than Greek (shaky ground, this), and modern physics is more congenial to theism than were either ancient or medieval or Newtonian physics (even shakier). In particular the relative space and time of modern physics are less deterministic and give more scope for divine intervention than the absolute space and time of Newton (also shaky). This book does not add significantly to what the author has said in earlier writings, and is again written in a very turgid and obscure style.

Both books are confident in tone, and each author makes it plain that he is never likely to take the other's point of view seriously. As I have said, it is Atkins who has written the exciting and memorable book, but the truth of the matter is a distinct question. To make progress we will need not just more scientific research, but also a better understanding of the status of these very high-level cosmological speculations. Both authors strain language, postulate unobservable, and put forward theories from which no testable predictions can be deduced.

Don Cupitt

Don Cupitt is lecturer in the philosophy of religion at the University of Cambridge.

Aftermath of a hurricane

The Hurricane and Its Impact by Robert H. Simpson and Herbert Riehl
Blackwell, £19.50
ISBN 0 631 12738 0

Revolving storms visit preferred areas in all tropical oceans from time to time—all except the South Atlantic. Among the picturesque local names for them, the term "hurricane" (Spanish hurricane) from the Atlantic area is thought to have been fashioned from names in use by local Indian tribes. In the western Pacific they are called "typhoons", and in other oceans "tropical cyclones". The Australian term "willy-willy" is in occasional use. However, the term hurricane has acquired a generic meaning, denoting a revolving storm with extreme winds, located anywhere in the global tropics.

Every year the tropical hurricane, which is often a major source of natural disaster, becomes a seasonal topic of fascination, now and sometimes fear, as it reminds residents of coastal zones of the need for awareness of hurricane hazards. However, because a hurricane occurrence at any one location is a rare event, public response to it is more that of fascination than fear, and uncertainty about the need for individual actions. Moreover, with the growth of population in the United States and of affluence and mobility in all levels of society, a larger percentage of the population is discovering the climatic and recreational advantages of living near a tropical seacoast. The result has been that the increases in population and property-at-risk at the seashores are higher than elsewhere.

The book describes the physical nature of the hurricane and its impact at sea and in the coastal areas. Originally published by the Louisiana State University Press, it is a revision of *Atlantic Hurricanes* by Gordon Dunn and Banner Miller, also published by the same press. Both Robert Simpson and Herbert Riehl are distinguished tropical meteorologists and Simpson was the founding director of the National Hurricane Research Laboratory. There is a limited number of books for this topic, and so it should find a wide audience among scientists, engineers, and members of the general public who want a comprehensive introduction to the scientific aspects and the social, economic and political consequences of hurricanes.

The first half of the book consists of a survey of the structure and life cycle of hurricanes, from their genesis over warm tropical oceans to their eventual

decay over land or colder water. Aspects of hurricane growth are illustrated by reference to individual storms such as the Australian hurricane Tracy, which on Christmas Day, 1974, destroyed the port of Darwin, the principal city on the Australian north coast.

The second half of the book deals with the effect of hurricanes on human activities near the coast. The authors comment that nine out of ten lives lost and the preponderance of damage at the coast result from inundation by the hurricane tide. More than half the nearshore damage from most hurricanes can be attributed to the inundation and scour that occur as the sea intrudes upon the coastal plains. Practical aspects, such as the variation in mean wind speed with height above the ground, the turbulent component of the wind, and the effect of wind on shoreline structures, are also treated. There is an assessment of hurricane threat, and return periods in years for threat, and return periods in years for hurricane strikes are given for 80 kilometre sections of the Gulf and Atlantic coasts of the United States and cumulative probabilities for the occurrence of hurricanes of varying intensity are presented.

A very interesting final chapter is concerned with the direct reduction of hurricane threat. The authors comment that a brute-force approach to such a task is clearly untenable. The huge energy transactions in a typical, moderate-sized hurricane far exceed any force that man can bring to bear. Even when one considers the more powerful hydrogen bombs, the energy that man can thereby release is small compared with that released by the average hurricane. Any viable hypothesis for hurricane moderation must be based upon the "Achilles heel" concept, whereby a relatively small amount of energy is applied strategically to alter the energy-transformation processes within the storm. Although a number of different means have been proposed for reducing hurricane wind speeds, the only concept to have undergone full-scale experimentation by the end of the 1970s is one that used cloud seeding (usually by silver-iodide smoke) to release energy in the inner rainbands. Although such experiments are interesting, they are still a very long way from providing a means of hurricane control.

The book provides an excellent summary of hurricanes and similar storms for both the general reader and the meteorologist. It is well produced and should find its way into most libraries on environmental topics.

J. G. Lockwood

J. G. Lockwood is senior lecturer in geography at the University of Leeds.

A worldly saint

The Letters of Erasmus Darwin edited by Desmond King-Hale
Cambridge University Press, £45.00
ISBN 0 521 23706 8

For years Erasmus Darwin moldered in obscurity, his poetic laurels - Coleridge once called him "the first literary character in Europe" - long withheld, his fame as a pioneer evolutionist eclipsed by his grandson Charles. Then Desmond King-Hale arose as his paladin, and in two biographies and an anthology staked his claims as a "mind of universal sympathy", a Midlands Leonardo da Vinci, creative in all he touched, and anticipating dazzling scientific and technological breakthroughs in fields from steam turbines to sewage-farms.

Scholars have sometimes scolded Dr King-Hale for his Whiggish hagiography of Erasmus Darwin as prophet, but he must now earn their deep respect and gratitude for collecting Darwin's letters for the first time, in a volume painstakingly researched, carefully edited, and meticulously produced.

How does the correspondent reveal the man? Only in flashes. Surprisingly, a mere 300 letters survive (contrast the Horace Walpole and the far more voluminous letters of the contemporary Rousseau). The first of these are composed of introductory letters to Darwin, who was busy, restless and blunt. The letters that followed, mostly to his Lunar Society friends, are salvo



The Scythian Lamb or borometz from C. Duret's *Histoire Admirable des Plantes* (1605). Taken from John Prest's *The Garden of Eden: the botanic garden and the re-creation of Paradise*, published by Yale University Press at £12.50. The book explores the development of the botanic garden in Europe in the light of sixteenth-century and seventeenth-century beliefs, and shows how the famous early gardens in Paris, Oxford, Padua, Leyden and Uppsala sought to re-create the Garden of Eden. Still thinking in terms of the Greek concept of a great chain of being, seventeenth-century philosophers believed that the Scythian lamb lived in the remotest parts of Asia, and had roots and a stem, like a young tree with the body of a lamb perched on top. The lamb ate the grass round its deeply rooted "foot", and then died, propagating itself by seeds like other plants.

of notes and queries not as mirrors of the soul (though the letters prove he was a doughty buddy, generous, if at times blunt: "Reason but skins the wound, which is perpetually liable to fester again", he consoled Richard Lovell Edgeworth on his daughter's death).

In his letters Darwin reveals little of the private self. No dreams or nightmares outpour, no secret loves or crises of identity. His two wives and 14 children have bit parts only; he is banteringly offhand about religion, and makes scant comment even about society, economy and politics (Pitt was Prime Minister for a decade before Darwin mentioned him). His broad political sympathies were those of an Enlightenment liberal who could write "I hate war", support the Americans in 1776 ("the happy contagion of liberty") and see the French Revolution as "the dawn of universal liberty". By 1795 he felt surveyed by "professed spies" and looked west to America as "the only place of safety". Yet he was no revolutionary - hardly a radical, as late as 1790 he was angling with courtiers for the poet laureateship, emphasizing the compliments he had paid the royal family in his *Loves of the Plants*.

Neither did Darwin use letters as trial runs for his books. There is little verse and no literary criticism (his letters suggest he pushed poems not from oracular mission or thirst for fame but to make cash to support his sprawling family). He does not test out his evolutionary theories. And - with the exception of a fascinating exchange with Thomas Beddoes on pneumatic therapies - Dr Darwin rarely traded medical ideas with other practitioners. Rather, from start to finish, the letters are the record of a mind ceaselessly inventive in designing machines, devising experiments, explaining phenomena, adapting contrivances: now he is sketching windmills to crush pigments for Josiah Wedgwood, now studying artesian wells, now doodling horseless carriages, now a canal lift, now embracing Lavoisierian chemistry, now seeking "means of preventing old age". Darwin's "nick-nack" factory fertility characterizes the Promethean energies of the Lunar Society circle of the early Industrial Revolution, even if the fact that few of his "mechanical" inventions came into use, highlights the gulf between crackling intellect and the pragmatic businessman like Matthew Boulton, who bore financing industrialization on their shoulders.

In the provinces, the moonbeams of Enlightenment lit up faces devoted less to abstract ideas than to the practical application of knowledge as power. King-Hale's labour secures Erasmus Darwin's halo in this Enlightenment company of worldly saints.

Roy Porter

Roy Porter is lecturer at the Wellcome Institute for the History of Medicine, London.

Being fair to Cauchy

The Origins of Cauchy's Rigorous Calculus by J. V. Grabner
MIT Press, £17.50
ISBN 0 262 07079 0

It is hard to be fair to Cauchy, either in his general life or in his mathematics, and there has been a lot of discussion about just how much he succeeded in doing in laying the foundations of the calculus.

It is not in dispute that he made a great step forward, and one of the author's stated purposes is to determine what, in his predecessor's work, made Cauchy's achievement possible. Her answer is that it was not the philosophical doubts of Berkeley and others that provided the spur so much as the great theories of the eighteenth-century mathematicians - Euler, d'Alembert and Lagrange. She supports this ably and with a light touch, which makes the book a pleasure to read.

But this is not her only purpose; for she is also concerned to show just how great Cauchy's achievement was, and here she emerges as very much on Cauchy's side. For her "discrepancy between what the mathematician expects and what Cauchy actually did is more apparent than real". So the crucial sentence is "We gather from the above passages the definition of continuity of a function 'an infinitely small increment in the variable always produces an infinitely small increment in the function itself' to be glossed as an explanation to help his readers in a self-consciously eighteenth-century style. This is far removed from Abraham Robinson's (also idiosyncratic) comment on the passage: "We gather from the above passages that infinitely small quantities are fundamental in Cauchy's approach to analysis". The truth lies somewhere in between.

The author is perhaps on sure ground when she makes the interesting point that Cauchy used his well-known pseudo-theorem (that the sum of a convergent series of continuous functions is a continuous function) as his derivation of the binomial theorem for a general index from its functional equation. She finds it more plausible motivation (as Lakatos argued) as an attack on Fourier. But then Cauchy's attitude to Fourier was none too creditable and we are back on the problem of being fair to Cauchy.

C. W. Kilmister

C. W. Kilmister is professor of mathematics at King's College, London.

BOOKS

Lunar guide

The Moon: our sister planet by Peter Cadogan
Cambridge University Press, £27.50
and £12.50
ISBN 0 521 23684 3 and 28152 0

The exploration of the moon began a new era in science. The stimulation of working with samples from another planet (following the usage of the author, which makes for simpler sentences) has resulted in the development of the science of planetaryology. Although meteoritic samples were available in the pre-Apollo era, their extreme variations in composition coupled with uncertainties about location made it impossible to place them in a generally acceptable account of planetary evolution.

The results from the lunar samples, coupled with the remote sensing data from other planets, now provides us with an excellent understanding, so that substantial progress is being made on the origin and evolution of the solar system. Criticisms of the space programme may be placed in the same category as complaints against Henry the Navigator for failing to make the early Portuguese voyages more profitable, for many unanticipated scientific results have emerged.

One of the most beneficial aspects of the research has been to promote communications between differing branches of science. It is a bold investigator of lunar samples who fails to integrate his studies into the broader picture. Geochemists, geophysicists and geologists alike have benefited from this exchange. The results of the investigation of the samples of six Apollo and three Luna sites were adequate to obtain an excellent understanding of the history and evolution of the moon, despite occasional statements to the contrary.

One of the most beneficial aspects of the research has been to promote communications between differing branches of science. It is a bold investigator of lunar samples who fails to integrate his studies into the broader picture. Geochemists, geophysicists and geologists alike have benefited from this exchange. The results of the investigation of the samples of six Apollo and three Luna sites were adequate to obtain an excellent understanding of the history and evolution of the moon, despite occasional statements to the contrary.

The results of these endeavours are published in perhaps 18,000 scientific papers, which, coupled with various detailed reports on sample and site descriptions, occupies some 15 or 20 feet of library shelf space. Only a few authors have essayed the task of consolidating this information into monograph form. Peter Cadogan's attempt is addressed to anyone in search of an authoritative survey of lunar science, "serving as an introductory text as well as providing a general review of the subject". The book does meet these criteria in a general sense, and would enlighten a reader previously unacquainted with the topic, particularly in the sections on dating.

There are, however, some non-trivial factual errors. The green glass from Apollo 15, generally regarded as among the most primitive of lunar samples, is depicted in the rare earth element diagram, europium, despite three statements on pages 184 and 191 to the contrary. The considerable implication of this fact is that the whole moon rather than just a shallow layer, as in this book, was completely melted in the initial differentiation. On page 242, the lunar origin of tektites is correctly dismissed but the author next states "so it now looks as though these enigmatic bodies must after all be the products of terrestrial meteorite impacts or explosive terrestrial volcanism" (my italics). The origin of tektites as products of terrestrial volcanoes was dismissed on energetic grounds, many decades ago. The discussion on lunar mascons (pages 269-271) places undue emphasis on the role of the mare basalt fill rather than on narrow mantle plugs as the most likely explanation. This section, and others, need updating beyond 1975.

These sorts of errors might have been avoided if the book had been read before publication by some of Dr Cadogan's scientific colleagues, but no evidence of this appears in the preface. Books commonly escape the peer review process to which scientific papers in reputable journals are subject. Accordingly, they are in danger of becoming degraded as a source of information unless publishers insist on such review. Also the book would have been vastly improved by adequate literary editing, as the colloquial style,

though well suited to the lecture theatre, becomes irritating in a book.

A more serious criticism is the absence of effective referencing of the scientific literature from which the conclusions are made. One has to accept the statements of the author as dogma. A selected bibliography of two pages is unhelpful, since it is not possible to proceed from the text to any identifiable source in which the facts or statements can be checked. The author should have provided an annotated bibliography of perhaps 100-200 of the more important sources of data and theories. A reader of the present text, having been well introduced to the fascinating field of lunar science, is left to contemplate the forest of lunar literature without any guide. The index is neither adequate nor comprehensive.

A second edition, suitably edited, updated and peer reviewed, with adequate references to sources and an extended index would be a useful addition to the lunar literature.

S. R. Taylor

S. R. Taylor is a professorial fellow of the Research School of Earth Sciences, Australian National University, Canberra.

Applying Laplace transforms

Laplace Transforms and Applications by E. J. Watson
Van Nostrand Reinhold, £8.50 and £3.95
ISBN 0 442 30176 6 and 30428 5

The author's aim is to show how the method of Laplace transformation can be applied to a variety of mathematical problems, and he does just that.

The book is essentially a collection of problems with neat solutions. Those covered involve ordinary and partial differential equations, integral, difference and functional equations, and solutions comprised of mixtures of these types. In some cases the problems are set as exercises for the reader, with answers given at the back of the book.

Properties of the Laplace transform are invoked as required, the author deriving these properties neatly and rigorously, using step-function methods where possible. To avoid disappointment he attempts to provide conditions that a problem must meet for it to be susceptible to the method, demonstrating in some cases how a problem may be modified so that it then becomes amenable to the method.

There are, however, some non-trivial factual errors. The green glass from Apollo 15, generally regarded as among the most primitive of lunar samples, is depicted in the rare earth element diagram, europium, despite three statements on pages 184 and 191 to the contrary. The considerable implication of this fact is that the whole moon rather than just a shallow layer, as in this book, was completely melted in the initial differentiation. On page 242, the lunar origin of tektites is correctly dismissed but the author next states "so it now looks as though these enigmatic bodies must after all be the products of terrestrial meteorite impacts or explosive terrestrial volcanism" (my italics). The origin of tektites as products of terrestrial volcanoes was dismissed on energetic grounds, many decades ago. The discussion on lunar mascons (pages 269-271) places undue emphasis on the role of the mare basalt fill rather than on narrow mantle plugs as the most likely explanation. This section, and others, need updating beyond 1975.

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Colin Tripp

Colin Tripp is lecturer in mathematics at Brunel University.

Fossil vertebrates

Basic Structure and Evolution of the Vertebrates, Volumes 1 and 2 by Erik Jarvik
Academic Press, £41.00 and £27.00
ISBN 0 12 380 801 4 and 380 802 2

During the past 40 years, Erik Jarvik's researches have been concerned, in particular, with describing the detailed anatomy of early vertebrates and the insights which this provides for an understanding of their evolutionary relationships. This very lengthy two-volume treatise in many ways summarizes and updates the accumulated results of his extensive research. Jarvik, a leading disciple of the "Scandinavian School" of evolutionary palaeozoology, has been consistently at variance with the views of research workers elsewhere in the world with regard to the evolution and phyletic relationship of vertebrates generally and I cannot help but feel both challenged and in part intimidated by this comprehensive broadside delivered in my own views on the subject.

In his introduction to volume one, Jarvik outlines the way in which the study of fossil vertebrates has become gradually more sophisticated. This was given considerable impetus by the work of Stensiö who was responsible for the first detailed preparations (using fine needles and solvents) of the internal structures of the head-shield of ostracoderms and thus elucidated their close relationship to modern cyclostomes (lamprey and hagfish). This technique was in turn refined by the use of the dental mallet, and also by Sollas's serial grinding method by which detailed wax models could be made revealing the internal structures of otherwise intractable fossils (there are several photographs of marvellous examples of this technique).

The remarkable detail in anatomical structure that is revealed by these techniques has in turn brought to light shortcomings in the anatomical descriptions of extant (living) vertebrates with which comparison may be made for the purposes of deciding upon evolutionary relationships. Thus it has become increasingly necessary for palaeontologists to study, in detail, living vertebrates to obtain adequate comparative data. This precise point is used by Jarvik as the rationale for the first two chapters, which describe in great detail, using superb schematic diagrams, the living holostean fish *Amia* (the bowfin) and the Devonian rhipidistian fish *Eusthanopteron* respectively.

Having compared at great length a living fossil "teleostome" - used by Jarvik in the sense of a vertebrate with a terminal mouth and outer range of tooth-bearing bones in the jaws including the maxilla, premaxilla and dentary - the third chapter is concerned with further Palaeozoic teleostomes and evidence of their relationships. This includes Jarvik's fish groups, Osteolepiformes, Poreolepiformes, Strunniiformes, Coelacanthiformes, Polypteriiformes and Palaeoacanthiformes, as well as the Ichthyostegalia, the earliest known definitive tetrapods.

Chapter four is concerned with describing a group termed the "plagiostomes" (equivalent to the rank of the teleostomes and also equivalent to Jarvik's "elasmobranchiomorphs" of earlier papers). This is deemed to include the Elasmobranchii (sharks, rays and sawfishes), Placodermi, Holocephali (Chimaera) and most remarkable of all, the Dipnoi or lung-fish.

The last three chapters of volume one are devoted to the Agnatha, recapitulating much of Stensiö's work and emphasizing the dissimilarities of the living hagfish or lamprey and their possible separate derivation from the heterostracan and osteostracan ostracoderms.

Volume two considers developmental anatomy and phylogeny under four general headings: first, the development and composition of the vertebrate head, with considerable emphasis being placed on the degree of segmentation (metamerism) exhibited by limbs; third, the origin of tetrapods; and finally, a broad overview of the problems of creating a phylogeny that reflects origins and relationships, and the concepts of monophyly and

polyphyly. He also summarizes his own ideas on the phylogeny of the vertebrates, which are decidedly polyphyletic.

This treatise is an immensely detailed work and is a remarkable testimony to the patience and painstaking application of Erik Jarvik in all areas of palaeozoology. As such it is a valuable contribution to the literature. However, although his descriptive anatomy is of the highest quality, the interpretation of his data and that of others in the Scandinavian school differs considerably from the "orthodox" views of most other palaeontologists.

As a milestone in evolutionary palaeozoology, these two volumes, though highly controversial in content, will be essential reading for all those concerned with unravelling our ultimate ancestry.

D. B. Norman

D. B. Norman is a consultant and tutor with the Open University, and a part-time lecturer in zoology at Queen Mary College, London.

A pinch of salt

Animal Osmoregulation by Clifford J. Rankin and John A. Davenport
Blackie, £16.75 and £8.25
ISBN 0 216 90014 5 and 91015 3

As life is thought to have originated in the sea, from the outset the living process has depended on an environment based on a dilute salt solution. Modern animals have inherited

the problem of sustaining such an internal environment against adverse external media. In the course of evolution many groups of animals have successfully made the transition from the sea by way of brackish-water estuaries to fresh water, some emerging on to land. Rankin and Davenport examine the manner of body fluid regulation in these environments, building a picture of the evolutionary development of the osmoregulatory mechanisms involved.

The study of osmoregulation bridges the disciplines of biology, chemistry and physics, thus incurring an excessive share of scientific terminology and nomenclature. It is perhaps for these reasons that the subject is often poorly taught and understood, and only lightly covered by most physiological texts. Rankin and Davenport's book will therefore be a valuable asset in teaching undergraduates.

An introductory chapter defines the basic principles and terminology, a necessary aid to someone considering the subject for the first time. However, being faced with absorbing such detailed information at the outset, as opposed to in context in later chapters, may present readers with problems. The main themes are then illustrated by reference to examples, drawing attention to directions of current research.

The areas of emphasis in the book reflect the authors' separate research interests in vertebrate and invertebrate hydromineral management. They are the first to admit that this is not a comprehensive evaluation of the subject. None the less, the book does provide a sound introduction to many aspects of the study of osmoregulation.

R. J. Balment

R. J. Balment is lecturer in zoology at the University of Manchester.

Macmillan have published a slightly revised edition of Derek V. Ager's *The Nature of the Stratigraphical Record* at £5.50. By concentrating on general principles concerning the stratigraphical record, the book provides a fascinating, if idiosyncratic, introduction to the history of the Earth as recorded in its rocks.

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Cut the cost of reading on February 12

The February 12 Issues of The Times Literary Supplement and Times Higher Education Supplement will contain THE ACADEMIC BOOK SALE listings. Hundreds of titles, many reduced to half price, will be on offer.

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Noticeboard is compiled by Patricia Santinelli and Mila Goldie

Chairs

Dr Anthony J. Sanford, at present reader in the department of psychology of the University of Glasgow, has been appointed to the chair of psychology at the university from October 1.

Appointments

Brunei
Head of Department Professor Igor Aleksander (Electrical Engineering and Electronics).

East Anglia
Head of Department Professor Douglas Lewin (Electronics).

Heriot Watt
Lecturers: Lorna H. Thomson (Psychology), Research Associate: A. B. W. Pooley (Physics and Science), Gordon W. Irvine (Education), J. D. Rankin from the Home Office as 'The present system for controlling experiments on animals in Britain' and Professor Sir William Paton, Heriot Watt University on 'Benefits from long term research: What benefits have accrued in the past and what might accrue in the foreseeable future?' Further information from Dr D. W. Morley at the above address.

Forthcoming Events

The British Association is to hold a meeting on experiments on living animals on January 26 from 9.30 to 5 pm at the British Association for the Advancement of Science, Fortness House, 23, South Parade, London W1, under the chairmanship of J. D. Rankin from the Home Office as 'The present system for controlling experiments on animals in Britain' and Professor Sir William Paton, Heriot Watt University on 'Benefits from long term research: What benefits have accrued in the past and what might accrue in the foreseeable future?' Further information from Dr D. W. Morley at the above address.

"A Utopian View of Government and National Industry" is the theme of a lecture to be delivered by Sir Peter Parker, Chairman of British Rail at 7 pm, Leicester University, Railway Lecture Theatre. Admission free.

"Should we Change the British Ecological System?" is the theme of one of the Royal Society of Arts' lectures to be delivered by Professor Anthony King, department of government, University of Essex, in the society's house at 18 John Adam Street, London WC2.

An exhibition of Soviet reference books and documents which is promoted by the USSR State Committee for Publishing, Printing and the Book Trade and the British Council is being held at the School of Slavonic and East European Studies, in the third floor foyer of St Anne House, North Block, Malet Street, London WC1. From January 19-29. Admission free.

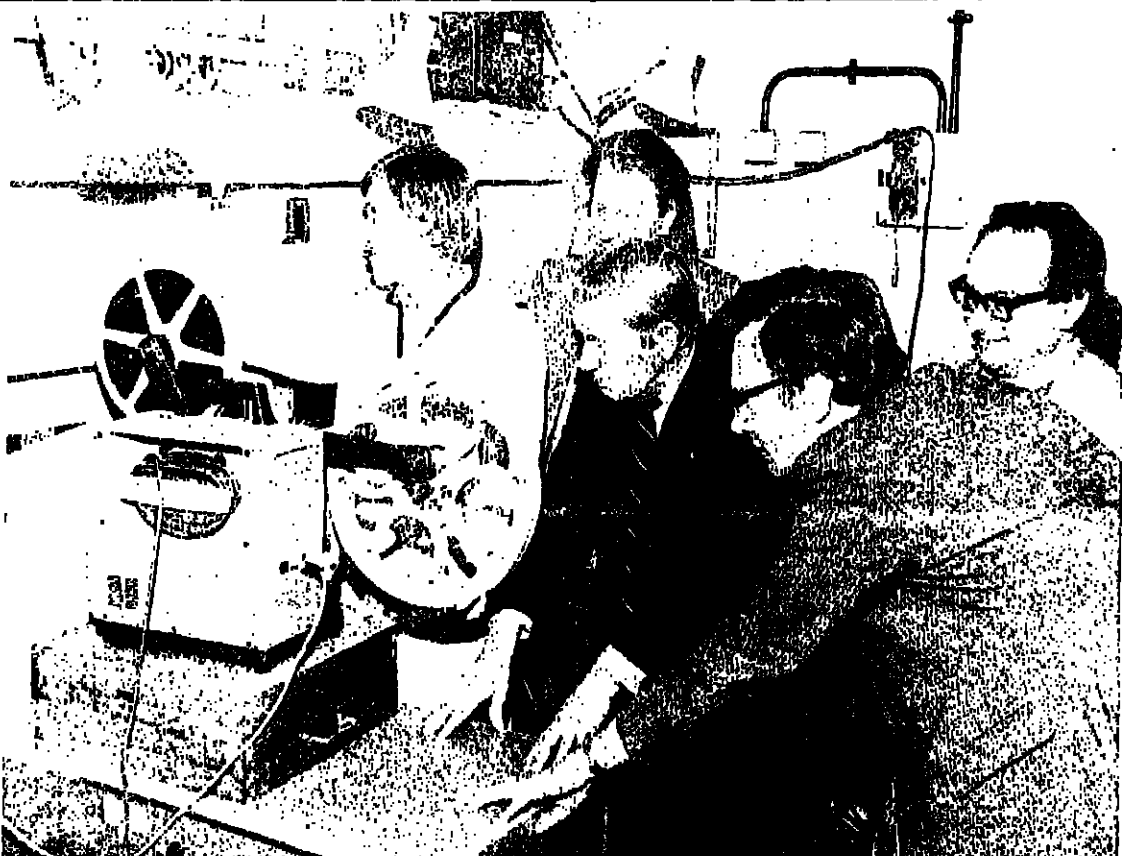
The second in a series of six lunchtime lectures in "Channel Four: What's the Difference?" is to be delivered on January 26 at 12.30 pm at the National Film Theatre, London. Commissioning Editor for Multicultural Programmes at Channel Four will be interviewed by lecturer and author of *Black in the Cinema* (Studio Vista) who programmes in involving the various cultures in British Society. Admission 50p.

The Polytechnic of Central London's school of management now has a team available every Monday evening to help business users of microcomputers with their applications, software, and specification. This is the contribution to the BBC Computer Literacy Project, National Information Technology Year and the micro centre initiative of the National Computing Centre. For policy will be linked to NCC micro centre practice and special privileges given to participants on polytechnic courses and activities. Details from 346 3511.

"John Locke on Language and Meaning" is the title of the Fregean Book memorial lecture to be delivered by Professor Peter Alexander, professor of philosophy at the University of York on Tuesday 3 at 4.30 pm in the English lecture theatre, Main Building, Queen's University of Belfast. Admission free.

"God and the Feudalism" in Sir Derek Ferra, chairman of the National Coal Board on February 9 to the first lecture in the fifth series of City Association lectures to be presented by the City of London Polytechnic in conjunction with the City of London Polytechnic. It will be delivered at 8 pm in the Moorgate Lecture Theatre, 100, Abchurch Lane, London EC4A 3DF. The City of London Polytechnic will be the main sponsor of the series. Tickets are free.

"The challenge of Information Technology" is to be the keynote address by Mr Kenneth Baker, Minister of State for Industry and Information Technology, at a four day (NSD) symposium held at the British Centre for Technology on February 12. Details from the European Study Centre, 10, Kirby House, 31, High Street, Southampton, Hampshire. Lecturer.



Mr Bob Mellish, MP and vice chairman of the London Docklands Development Corporation in the projection room of the new lecture theatre of Hackney College which he opened last week. The corporation financed the renovation of the lecture hall after a cash shortfall by the ILEA which had started the rebuilding project.

Grants

Birmingham
Immunology - Dr D. R. Stanworth - £74,190 from MRC for research on development on a new type of anti-algic drug.
Mechanical engineering - Dr M. M. Sadek and Professor S. A. Tobias - £27,000 from SERC for the further development of computer aided techniques for the design of forging machines of substantially reduced noise emission.

Bradford
Chemistry - Professor G. Shaw - £17,800 from the SERC for research into the application of a novel modification of the Marchand reaction to the synthesis of antiacetylenes.
Management Centre - Dr R. J. Butler, Jeff Hyman and Tom Schuller - £31,000 from the Leverhulme Trust to study employee participation in the management of pension funds.
Physics - Dr C. B. Thomas - £31,395 from the Ministry of Defence to study an investigation of the steady-state and transient changes of the optical reflectivity of the metal insulator transition in NiO_2 (and IrO_2).

Edinburgh
Education - Godfrey Thomson Unit - additional grant of £200,000 from the Scottish Education Department for the development of learning banks in secondary mathematics, science and reading. An item bank in primary mathematics is also being developed.
Urban design and planning - John Thomson and Phil Bowers - £16,400 from the Scottish Development Department to appraise for their residential roads and footpaths in Scotland.

Exeter
Physics - Dr T. D. Whyte and Professor A. G. Wray - £26,764 from SERC to study the air Lyman surrounding primary waves rotating at high speeds. The grant includes money to employ a research assistant and a post-doctoral fellow.
Psychology - Professor J. R. Eyer - £49,110 from SERC for research on nuclear energy and its alternatives: attitudes and beliefs in South West England.
Agricultural economic audit - £18,670 from the European Economic Commission, £10,000 from the Entol Cook Trust and £1,000 from the English Tourist Board for a study of farm tourism and recreation in a solution to the social and economic problems of the distilleries in Scotland and England and Wales.
Electricity and geology - Professor Malcolm Todd - £25,000 from Manpower Services Commission.

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Honorary degrees

Glasgow
The following are to be awarded honorary degrees in June:
D.D. Professor Alvin Plantinga, professor of Philosophy at Calvin College, Michigan and Notre Dame University, Indiana.
L.D.S. Sir William Kerr Fraser, permanent under-secretary at the Scottish Office, Sir Simon Stevenson, chairman of the Greater Glasgow Health Board.
Litt.D. Dr. Mr Serge Miosovicki, director of studies, Ecole des Hautes Etudes en Sciences Sociales, Paris. Mr Gilles Invernizzi, artistic director of the Citizens Theatre, Glasgow. Mr John M. Lindsay, author, poet and director of the Scottish Civic Trust.
D.Ses. Mr Gunter Mackensen, professor of ophthalmology, dean and proctor in the University of Freiburg.
Sir Michael Stoker, president of Clan Hill, Cambridgeshire. Mr Alan Wells, chair general of the Welling Institute.
D.VMS. Sir William Welpers, formerly head of the veterinary school.

Recent publications

Vacation Work Publications, ten new titles for 1982: *The Directory of Jobs and Careers Abroad*. The newly updated fifth edition is a permanent career opportunities about the people of all walks of life. The most successful methods of setting about finding work abroad are outlined, including lists of those agencies, consultants and associations which are active in providing openings. Hardback £5.50.

The International Directory of Voluntary Work. Covers every aspect of voluntary work and describes organizations attempting to meet all kinds of problems and satisfy many different needs. The directory draws distinction between residential and non-residential work.
1982 Directory of Summer Jobs in Britain. 30,000 vacancies listed in England, Scotland and Wales (fruit and hop-picking, hotel, youth hostels, farming, child care, office work, holiday archaeological digs, riding centres, etc.) Hardback £5.50.

1982 Directory of Summer Jobs Abroad. 20,000 vacancies listed in 40 different countries, including Germany, France, Spain, Switzerland, Scandinavia, Italy, Israel, Morocco, Greece etc. Research £400, 985-1457, 539; Senior Lecturer £400, 985-1457, 539; Lecturer £400, 985-1457, 539.

1982 Summer Employment Directory of the US. Published by Writers Digest Book and American and distributed in Europe by Vacation Work. 50,000 jobs listed for students in the United States and Canada. £5.95.

1982 Emplois D'Été en France. Includes all and includes such as waiting and bar staff, sports instructors, receptionists, help in children's summer camps. £4.50.

Kibbutz Volunteer. Written by John Biddell, the book not only gives full details of 80 kibbutzim but also tells the reader what to expect when working in one and describes the social atmosphere in these communities. Hardback £5.50.

1982 Adventure Holiday Guide Britain and Abroad. 470 organizations offering wide-ranging, exciting, sailing and riding and other activities. Hardback £4.50.

Travelers Survival Kit to Europe. The essential handbook for all visitors to Europe. £3.95.

Travelers Survival Kit to the East. For all travellers between Turkey and South East Asia. Provides practical information about 15 Asian countries, recommendations for transport, accommodation and sight-seeing. £4.95.

Hitch-Hikers' Manual Britain. Town Guide covers 200 British towns; the best places to stand when trying to hitch out; a detailed motorway hitching, with maps. £3.95.

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@ £74.25
Classified Linage - £1.60 per
line
Minimum 3 lines - @ £4.80
Box number - £2.00
Copy deadlines:
Classified Display:
Friday in the week prior to
publication
Classified Linage:
Monday 10.00 am in the week
of publication

Universities



Applications are invited for the following posts, for which applications close on the dates shown. SALARIES (unless otherwise stated) are as follows:
Professor £44,304; Associate Professor £34,071; Senior Research Fellow £26,282-£42,928; Research Fellow £20,985-£27,539; Senior Lecturer £26,282-£42,928; Lecturer £20,985-£27,539.
Further details and application procedure may be obtained from the Association of Commonwealth Universities (ACU), 38 Gordon Square, London WC1H 0PF unless otherwise stated.

Australian National University
RESEARCH FELLOW/SENIOR RESEARCH FELLOW
DEPARTMENT OF ECONOMICS
RESEARCH SCHOOL OF PACIFIC STUDIES
The Department seeks an economist to conduct full-time independent research in any aspect of international economics, theory or applied, or in development economics, in the latter cases preferably with relevance to the countries of Southeast or East Asia. Evidence of research productivity as shown by academic publications is essential. The appointment is normally for three years, with possible extension after review. The successful candidate would also be free to receive outside appointments in an appropriate manner. Further details about the Department can be obtained from the Head, Professor W. M. Gordon, in the University.

Macquarie University
ASSOCIATE PROFESSOR
IN MASS COMMUNICATION
School of English and Linguistics
Applications are invited for appointment to the post of Associate Professor of Mass Communication. The successful candidate will be expected to teach and supervise in the field of mass communication and to be actively engaged in research. The position is full-time and permanent. Further details and application procedure may be obtained from the Head of School, Professor A. W. Dixon-Smith, at the above address.

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The University will pay travel expenses for the appointee and family to Arrmidale, together with reasonable maintenance expenses. Other benefits include superannuation (FBSU pattern) or N.S.W. State Superannuation Scheme) and assistance in obtaining finance for building or buying a home. The appointee will be eligible to apply for study leave with appropriate travel grants.
Full particulars can be obtained from the Staff Office, The University of New England, Armidale, New South Wales 2351, Australia. Applications should include the names and addresses of three referees.
Informal enquiries may be directed to the Chairman of the Academic Board, Professor P. J. Drake, or to Professor N. H. Frazier, in the University.
Applicants in the United Kingdom and Europe should forward an application form, by the same date, to the Personnel Office of the Association of Commonwealth Universities (App.), 14 May 1982.

DEPARTMENT OF ACCOUNTING AND FINANCIAL MANAGEMENT
The department is one of five departments within the Faculty of Economic Studies and offers undergraduate and postgraduate courses in internal and external auditing, accounting, financial systems, legal studies and small business management. Degree offered in accounting, financial management, financial administration, diploma in financial management, Master of Economics and Ph.D.
Applications for the following posts, containing full details of qualifications, experience, research interests, publications and postgraduate studies should be sent to the Staff Office by the same date. The successful candidate will be expected to teach and supervise in the field of accounting, financial systems, legal studies and small business management. Degree offered in accounting, financial management, financial administration, diploma in financial management, Master of Economics and Ph.D.

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PAISLEY COLLEGE
SENIOR LECTURESHIP
Department of Electrical and Electronic Engineering
(Salary scale £11,139 to £14,079)
Applications are invited from honours graduates with academic or industrial research experience in the area of signal processing or control engineering. The successful candidate will be expected to teach to honours degree level, and carry out R and D in collaboration with industry. Application forms and further particulars are available from the Personnel Officer, Paisley College of Technology, High Street, Paisley PA1 2BE. Tel: 041-887 1241, Ext. 230, to whom completed forms should be returned within 10 days of the appearance of this advertisement.

LAW MANAGEMENT
The salary scales (under review) are:
College Lecturer IR£9,384 - IR£11,002 Bar IR£11,023 - IR£14,090 p.a.
Assistant Lecturer IR£8,139 - IR£8,847 p.a.
Application forms and further details of the posts may be obtained from the undersigned.
Latest date for receipt of applications is Friday 19 February, 1982.
M.F. Kelleher
Secretary

University of Oxford
Department of Educational Studies
Applications are invited for 2 posts as
TUTOR
With effect from October (or September) 1982.
Both appointments will be for 5 years' in the first instance, thereafter renewable to retirement age. The salary scale will be that of university lecturer. One appointment will require specialisation in ENGLISH, and one in GERMAN.
Tutors are required to teach for advanced degrees, as well as for Post-Graduate Certificate in Education and to engage in research.
Applications together with names of two referees should be made before 12th February, 1982 to The Director, Department of Educational Studies, 15 Northam Gardens, Oxford, OX2 6PY from whom further particulars may be obtained.

DEPARTMENT OF PHYSIOTHERAPY
SENIOR LECTURERS 'A' - 2 POSTS
(P.L. Equivalent)
£11,319 - £12,399 (Bar) - £14,079
(Post Reference: 8715 and 8716)
These senior staff will have the responsibility for the development of specialist subject areas at degree and diploma level, combined with research and administrative responsibilities. Further particulars and application forms for the above post, quoting reference number may be obtained from the Personnel Office at the undermentioned address. The closing date for receipt of applications is 12th February, 1982.
THE QUEEN'S COLLEGE
GLASGOW
1 Park Drive, Glasgow G3 8LP
Tel: 041-334 8141
A Scottish Central Institution

ST. JOHN'S COLLEGE
OXFORD
College Lectureship in French Language and Literature
Applications are invited from suitably qualified men and women for a College Lectureship for three years in French Language and Literature with effect from 1 October, 1982, or as soon as possible thereafter. Candidates should be prepared to teach 10th and 20th century French literature and to take French language classes. The person appointed will be expected to teach up to twelve hours a week, to engage in research, and to participate in administrative and pastoral work.
The appointment salary will be £8070 as per scale 26, and £8680 as per scale 27, rising by annual increments, together with certain benefits and allowances.
Applications, with details of career and publications and the names of three referees, should be sent, not later than 15 February, 1982, to the Secretary, St. John's College, further particulars may be obtained.

SURREY UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
RESEARCH FELLOW
This post commencing in October 1982 will be for two years to work under the direction of Dr. David Canter on a project to develop a model of the environmental decision factor in industrial accidents. Applicants should have an appropriate postgraduate qualification in psychology and an understanding of field research. The successful candidate will be expected to engage in research, to participate in administrative and pastoral work.
The appointment salary will be £8070 as per scale 26, and £8680 as per scale 27, rising by annual increments, together with certain benefits and allowances.
Applications, with details of career and publications and the names of three referees, should be sent, not later than 15 February, 1982, to the Secretary, St. John's College, further particulars may be obtained.

Specialist

NEWCASTLE UPON TYNE UNIVERSITY OF DEPARTMENT OF ENGINEERING

Applications are invited for the post of Lecturer in the Department of Engineering... The appointee will be concerned with the development of control methods...

Applicants should have a PhD in a suitable area of research... The appointment will be for a fixed period of three years up to £7,100 per annum...

Written applications should be sent to the Director of the Department of Engineering... Applications are invited for the post of Lecturer in the Department of Engineering...

Applicants should have a PhD in a suitable area of research... The appointment will be for a fixed period of three years up to £7,100 per annum...

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Polytechnics

The Polytechnic Council invites applications for the post of

Director

The Director is the chief executive officer of the Polytechnic and the Council will be looking for a person with high qualifications and proven ability to fill this demanding and important position.

Salary: £24617.50 per annum. Closing date for receipt of completed applications: 15 February 1982.

For further particulars please write to: The Chief Administrative Officer, Preston Polytechnic, Preston PR1 2TU.



Bristol Polytechnic Assistant Director (Academic)

Applications are invited for the post of Assistant Director (Academic) which carries responsibility to the Director for the general oversight of all academic affairs.

Applicants should have substantial experience of academic leadership and management in higher education and should additionally be experienced Teachers and Research Workers.

Applicants should have a PhD in a suitable area of research... The appointment will be for a fixed period of three years up to £7,100 per annum...

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ARGIT

ROBERT GORDON'S INSTITUTE OF TECHNOLOGY, ABERDEEN SCHOOL OF HOTEL AND INSTITUTIONAL ADMINISTRATION

DEPUTY HEAD OF SCHOOL SENIOR LECTURER with appropriate academic and professional qualifications and industrial and teaching experience for duties as subject leader in Hotel, Catering and Accommodation Management Studies for proposed Degree Course in Hotel, Catering and Institutional Administration.

LECTURER IN APPLIED ADMINISTRATION STUDIES academically and/or professionally qualified to lecture at Higher Diploma and Degree level in any two of: Marketing of Hotel and Catering Services; Applied Computer Studies for the Hotel and Catering Industry; Applied Economics.

Industrial experience desirable. Salary scale £8894 - £11,885 per annum. Details from Secretary, Robert Gordon's Institute of Technology, Schoolhill, Aberdeen, AB9 1FR, (0224-574511).

Department of Fine Art RESEARCH ASSISTANT/ DEMONSTRATOR (Salary £6034-£6260-£6466-£6686) Graduate students from accredited centres of Art and Design are invited for the position of Research Assistant/Demonstrator in Sculpture.

Applicants should have, or be likely to obtain, a good honours degree in an appropriate discipline. It is not necessarily an essential requirement that this post graduate study should lead to a higher degree.

Further details and form of application from The Assistant Director (Administration), Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Forms to be returned as soon as possible.

LEICESTERSHIRE COLLEGE OF ART AND DESIGN PART TIME TUTOR IN MACHINE EMBROIDERY Required to teach BA (Hons) students for 12 hours each week...

Applications are invited for the above post, duties to commence as soon as possible. Salary: £15,045 - £16,590 p.a.

Applications are invited for the post of Principal Lecturer in Sculpture with responsibility for Ceramics.

Applicants are invited for the post of Principal Lecturer in Sculpture with responsibility for Ceramics. The appointee will be responsible for the teaching of sculpture and ceramics to students on the BA (Hons) Sculpture and Ceramics course.

Applicants should have a PhD in a suitable area of research... The appointment will be for a fixed period of three years up to £7,100 per annum...

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Polytechnics cont

BRISTOL POLYTECHNIC DEPARTMENT OF BUSINESS STUDIES

Applications are invited for the following posts, closing date 15 February 1982.

LECTURER IN BUSINESS COMMUNICATIONS - Ref No L26/129 To teach Business Communication a BSC Higher National Certificate / Diploma course...

Candidates should have a degree or professional qualifications with business and teaching experience relevant to both written and oral business communication. Salary: £11,298 - £12,591 per annum.

LIVERPOOL LECTURER IN HOME ECONOMICS F. L. COLLIER COLLEGE OF EDUCATION (in process of amalgamation with Liverpool Polytechnic)

Required to teach Home Economics to students on the BA (Hons) Home Economics course. Salary: £11,298 - £12,591 per annum.

LONDON MIDDLESEX POLYTECHNIC COMPUTER CENTRE LECTURER SENIOR LECTURER (Computers in Education) £1221 - £12,925 p.a.

With experience of use of computers in education for schools and in relation to teacher training. Good academic and professional qualifications and appropriate professional status.

Colleges of Art LEICESTERSHIRE COLLEGE OF ART AND DESIGN

Applications are invited for the above post, duties to commence as soon as possible. Salary: £15,045 - £16,590 p.a.

Colleges of Further Education CANTERBURY CHRIST CHURCH COLLEGE OF FURTHER EDUCATION

TEACHER/ADVISOR IN LEARNING TECHNOLOGY SENIOR LECTURER IN LEARNING TECHNOLOGY (Research/Development)

The college, in association with the Kent Education Committee, is seeking a joint post in Learning Technology in the college, which will be concerned with the provision of advisory services to primary and secondary schools.

Applicants should have a PhD in a suitable area of research... The appointment will be for a fixed period of three years up to £7,100 per annum...

PRINCIPAL LECTURER ENGINEERING DESIGN & MANUFACTURE

Applications are invited for this senior post in the School of Engineering. Responsibilities will include teaching to degree level, subject leadership, research and consultancy.

Salary: £11,298 - £12,591 (bar) - £14,238 Application forms and further details may be obtained from:

The Personnel Office Hull College of Higher Education Inglemire Avenue, HULL HU8 7LU Tel: (0482) 446506



COUNCIL FOR EDUCATIONAL TECHNOLOGY

Seeks applications for the post of Assistant Director

The post will become vacant on 1 April, 1982 when Mr. L. A. Gilbert, who has been an Assistant Director since 1980, is retiring to take up consultancy work.

The Council is the publicly funded central organisation charged with developing the application of educational technology to all levels of education and training throughout the United Kingdom.

An Assistant Director contributes to the formulation of strategic and programme policy and takes full managerial responsibility for defined aspects of the Council's work.

Applicants will need to be conversant with current trends in technology and aware of their implications for education and training. They must have sound managerial and administrative experience and be used to working with senior staff in education and training in the government service.

Salary will be on the scale £13,207 to £17,063. Fuller details of the post and of the Council's work are available. Written applications (no form) accompanied by full curriculum vitae should reach the Director of CET by 26 February, 1982.

Envelopes should be marked AD in the bottom left hand corner.

CET COUNCIL FOR EDUCATIONAL TECHNOLOGY 3 Devonshire Street, London W1N 2BA.

Colleges of Further Education

Cornwall Education Committee Mid-Cornwall College of Further Education, St. Austell

Appointment of Principal

Applications are invited for the post of Principal of the Mid-Cornwall College with effect from 1st September, 1982.

Under the provisions of the Burnham (Further Education) Report, the College is in group 5 and the salary for the post of Principal is £17,703.

Application forms and further details are available, receipt of a stamped and self-addressed envelope, from the Secretary for Education (F.E.), County Hall, Truro, Cornwall, TR1 3BA. Completed applications should be returned by 1st February, 1982.



ROYAL MILITARY COLLEGE OF SCIENCE Shrivernham Swindon Wiltshire

RESEARCH SCIENTIST

Department of Electrical and Electronic Engineering Interaction of Microwaves with the Human Body

Applications are invited for a research post concerned with innovative electro-magnetic engineering design work on microwave antennas and devices for inducing hyperthermia and monitoring tissue temperature.

This is a Period Appointment with a duration of three years. Appointment will be made at Higher Research Scientist level according to qualifications and experience.

Qualifications: Applicants must hold a good honours degree in physics, mathematics or engineering and have the ability to carry out experimental and engineering design work in microwaves.

Salaries: Higher Research Scientist (minimum of 3 years postgraduate experience) £6,530 - £8,589 p.a. Research Scientist £5,176 - £6,964 p.a.

Accommodation for a single person may be available in a Hall of Residence and there is a possibility of housing for a married candidate.

Application forms and further information may be obtained from the Civilian Administration Office, Royal Military College of Science, Shrivernham, Swindon, Wiltshire SN6 8LA. Tel: 0793-782551, Ext. 421. Please quote reference HQ 12/01/22.

Closing Date for Application 12th February, 1982.

NoneCollegeNorthampton

Lecturer in Psychology of Education

The post will be offered at LI or LII, according to qualifications and experience. Forms and further details may be obtained from The Dean of the Schools of Education and Social Science, None College, Moulton Park, Northampton NN2 7AL. (Tel: 0604 715000). To be returned within 21 days of this advertisement.

Applicants to advertisement of this post in the Autumn Term, 1981, will be reconsidered and need not reapply.

Miscellaneous

LONDON INNER LONDON UNIVERSITY SOUTH WEST LONDON COLLEGE

PROFESSIONAL ACCOUNTING STUDIES DEPARTMENT Required to teach as part-time lecturer on the BSc (Hons) Accounting course. Salary: £11,298 - £12,591 per annum.

Applications are invited for the post of Lecturer in the Department of Accounting. The appointee will be responsible for the teaching of accounting to students on the BSc (Hons) Accounting course.

Applicants should have a PhD in a suitable area of research... The appointment will be for a fixed period of three years up to £7,100 per annum...

BIRMINGHAM UNIVERSITY OF AUSTON

RESEARCH FELLOW / SENIOR RESEARCH FELLOW

Three appointments to the Research Fellow / Senior Research Fellow posts are available in the Department of Management Studies.

Applications are invited for a research post concerned with innovative electro-magnetic engineering design work on microwave antennas and devices for inducing hyperthermia and monitoring tissue temperature.

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Colleges of Technology

BOLTON INSTITUTE OF TECHNOLOGY (Part of BOLTON INSTITUTE OF HIGHER EDUCATION from 1st Sept. 1982) DEPARTMENT OF ELECTRICAL ENGINEERING Lecturers II/Senior Lecturers (2 Posts) To teach on Degree and Higher Technician courses and retraining courses for industry. Applicants should be well qualified, preferably with recent industrial and/or research experience, in Electronic, Communication, Control or Computer Engineering or a related discipline. For one post a desire to develop an expertise in Digital or Data Communications will be especially welcomed. Research, consultancy and the development of industrial links are encouraged. The appointments may be at L1 or S.L. level with the point of entry dependent upon previous experience. Salary scale: £6,482 - £11,328 (bar) - £12,141 Application forms and further particulars from: The Vice-Principal, Bolton Institute of Technology, Dean Road, Bolton, BL3 5AB. Closing date for return of applications: 12th February, 1982.

DUNDEE COLLEGE OF TECHNOLOGY LECTURESHIP IN CIVIL ENGINEERING Applications are invited from candidates having a good honours degree in civil engineering together with relevant teaching, industrial and/or research experience. The vacancy is in the area of Foundation Engineering and the person appointed will be required to teach up to honours degree level, to develop his/her special fields of interest and undertake research in this area. The salary is on the Lectureship (A) scale, viz. £8,894-£11,160 (Bar) - £11,985, with initial placing dependent upon approved prior experience. Financial assistance towards the cost of removal expenses may be payable. Further particulars and application forms are obtainable from the Personnel Officer, Dundee College of Technology, Bell Street, Dundee, DD1 1HG, to whom completed applications should be returned by 8 February, 1982.

HAMPSHIRE FARNBOROUGH COLLEGE OF TECHNOLOGY HEAD OF DEPARTMENT OF ELECTRICAL ENGINEERING, MATHEMATICS AND COMPUTING (Grade IV) This post will become vacant on 1st May, 1982 due to the retirement of the present holder. The Department offers a wide range of courses up to T.E.C. Higher Diploma and degree standard. Applicants should hold at least an honours degree in a field of work for which the Department is responsible and have relevant industrial, teaching and administrative experience. Further particulars from: The Staffing Officer, Farnborough College of Technology, Boundary Road, Farnborough, Hants, GU14 5BB. S.A.E. please. Closing date: 5th February, 1982.

SURREY EDUCATION COMMITTEE NORTH EAST SURREY COLLEGE OF TECHNOLOGY READING ROAD, SWELL, SURREY GU24 0JH. Required as soon as possible. LEEDS THE UNIVERSITY OF LEEDS FULL-TIME and PART-TIME Applications are invited from good honours graduates in the social and behavioural sciences, management, medicine, dentistry, nursing or related fields, qualified and normally suitably employed, to take up a Lectureship in the Department of Health Services Studies. Further details and application forms should be obtained from the Director of Health Services Studies, The University of Leeds, Leeds LS2 9JT.

Announcements... REMINDER COPY FOR ADVERTISEMENTS IN THE THES SHOULD ARRIVE NOT LATER THAN 10AM MONDAY PRECEDING PUBLICATION

The University of Sussex Education Area M.A. IN EDUCATION COURSES The University of Sussex offers a wide range of full-time and part-time M.A. in Education courses related to the needs and interests of those working in all sections of education. Applications are now invited for admission to the following courses in 1982-83: Curriculum Development in Schools (1 yr F-T) A well-established course for experienced serving teachers, advisers, senior school management and others concerned with curriculum development and school organisation. Curriculum Development in Higher and Further Education (1 yr F-T, 2 yrs P-T) For those with teaching experience in H.E. and F.E.; focuses on course evaluation, staff development, research methods and organisational structures. Curriculum Evaluation, Planning and Management in the Context of National Development (1 yr F-T) For experienced educators working in developing countries, focusing on the analysis of current educational problems and the design and implementation of educational innovations. Education and Society (1 yr F-T) A generalist course enabling students to examine educational processes and practices from the key disciplines of philosophy, sociology and anthropology. Education (3 yrs P-T) A general course on a wide range of issues relating to Education, including curriculum analysis and evaluation, analysis of classroom transactions, analysis of institutions and a course option on Family, Schooling and Society in Britain since 1850; intended for teachers and others working in the education sector across the full range of institutions and levels of responsibility. Educational Policies and Decisions Making (2 yrs P-T) For educational administrators both on the staffs of LEAs and senior members of the teaching profession; includes a wide-ranging exploration of the decision-making process and the contexts in which educational policies are formulated and put into practice. Language, the Arts and Education (1 yr F-T, 3 yrs P-T) Aims to assist the professional development of teachers and lecturers; concerned with the nature of sign, symbol and the art process; allows for creative work and should interest all those concerned with literature, arts and the mass media. Further details and application forms for admission in the Autumn 1982 from: Admissions Secretary (THES), Education Development Building, University of Sussex, Brighton, East Sussex, BN1 9RQ. Telephone: 0273 808788, Ext. 828.

UNIVERSITY OF LANCASTER DEPARTMENT OF GERMAN STUDIES 1-Year (Full-Time) MA in Intellectuals in East and West Germany This taught postgraduate course charts the changing role of writers and intellectuals in the Federal Republic and the GDR from 1945 to the present. Subjects treated include: Intellectuals and Ideology; Social structures of the two Germanies; The writer as Intellectual; Gruppe 47; Bötti, Grass, C. Wolf, V. Braun; U. Existentialem; The role of the press; Intellectuals and student movement; GDR: State ideology and dissent; Intellectuals and terrorism. Applications are invited for the year beginning October 1982. Further details are available from the Secretary, Department of German Studies.

Overseas SOUTH AFRICA UNIVERSITY OF CAPE TOWN CHAIR IN ELECTRICAL ENGINEERING (ELECTRONICS) Applications are invited for the above post (date of institution of duty negotiable). Electronics is a fast growing discipline in the department of Electrical and Electronic Engineering and the country's need for well qualified staff in this area is increasing. The successful candidate will be expected to participate in the teaching and supervision of students in his chosen field. Appointment will be for a period of 3 years, with the possibility of extension. Salary is negotiable. R10,000 - R12,000 per annum. Staff benefits include 75 percent remission of tuition fees for dependants at UCT, a housing subsidy, a housing allowance, pension fund, medical and group life insurance. For application forms and further details contact: The University of Cape Town, Department of Electrical Engineering, Rondebosch, Cape Town, 7700. Closing date: 1st March 1982.

Overseas SOUTH AFRICA UNIVERSITY OF CAPE TOWN LECTURER IN COMPUTER SCIENCE Applications are invited for the above post for 1982-83. The successful candidate will be expected to participate in the teaching and supervision of students in his chosen field. Appointment will be for a period of 3 years, with the possibility of extension. Salary is negotiable. R10,000 - R12,000 per annum. Staff benefits include 75 percent remission of tuition fees for dependants at UCT, a housing subsidy, a housing allowance, pension fund, medical and group life insurance. For application forms and further details contact: The University of Cape Town, Department of Computer Science, Rondebosch, Cape Town, 7700. Closing date: 1st March 1982.

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Overseas

pcl International Services The Polytechnic of Central London OVERSEAS CONTRACT APPOINTMENTS

Ngee Ann Technical College Republic of SINGAPORE This premier Government Institute, offering 3-year courses at higher technician level, invites applications for appointment to the following departments/units: Mechanical Engineering, Electrical & Electronic Engineering, Shipbuilding & Repair Technology, Mathematics & Science, Business Studies, Building, Computing, English Language. Appointments will be to one of the grades: Principal Lecturer: \$554,041 - \$667,652 Senior Lecturer: \$338,584 - \$465,344 Lecturer: \$222,802 - \$341,964 Gross annual emoluments (Present rate of exchange £1 = S\$3.94) Grade and point of entry determined by qualifications and experience. Candidates should have an acceptable university degree and/or professional qualification in a relevant field and have at least 2 years' industrial/teaching experience. However, preference will be given to candidates with experience/expertise in the following areas: Mechanical Engineering a) Materials and Fabrication Technology b) Air-conditioning and Industrial Refrigeration c) Instrumentation and Control d) Industrial Automation Electrical & Electronic Engineering e) Measurement and Control Business Studies f) Computer Applications and Systems Analysis Building g) Building Services Automation h) Estate/Property Management i) Building Services Engineering j) Sanitary Engineering Contracts, initially for 2 or 3 years, incorporate usual overseas benefits.

BRITISH COLUMBIA UNIVERSITY OF VICTORIA VISITING PROFESSORSHIP IN CLASSICAL ARCHAEOLOGY Applications invited for visiting professorship in Classical Archaeology, to teach Junior and senior courses in classical archaeology, with an emphasis on the Mediterranean. Canadian candidates eligible for an appointment from another institution. Salary and conditions of appointment negotiable. Candidates should have a Ph.D. in Archaeology, a minimum of 5 years' postgraduate research experience, and a minimum of 3 years' teaching experience. Applications should be sent to: The Head, Department of Archaeology, University of British Columbia, Vancouver, Canada V6T 1W2.

Overseas SOUTH AFRICA UNIVERSITY OF CAPE TOWN CHAIR IN ECONOMIC GEOLOGY This post has been established in the Department of Geology and Mineralogy and the successful candidate will be expected to participate in the teaching and supervision of students in his chosen field. Appointment will be for a period of 3 years, with the possibility of extension. Salary is negotiable. R10,000 - R12,000 per annum. Staff benefits include 75 percent remission of tuition fees for dependants at UCT, a housing subsidy, a housing allowance, pension fund, medical and group life insurance. For application forms and further details contact: The University of Cape Town, Department of Geology and Mineralogy, Rondebosch, Cape Town, 7700. Closing date: 1st March 1982.

Kingsmead College Johannesburg, South Africa The post of Headmistress will become vacant in December 1982 following the retirement of Mrs. Jane O'Connell M.A. (Edinburgh). The College is a non-denominational girls' school for day pupils and boarders. It is located in Melrose, one of Johannesburg's most attractive residential suburbs, and is acknowledged to be one of South Africa's leading girls' schools. With a current enrolment of about 550 pupils from 12 to 18 years of age, the College offers a wide range of academic and other educational opportunities. There is a staff of 45 teachers, including a number of specialist teachers. The Headmistress is the chief academic and administrative officer, and is responsible to the Board of Governors. Applications, together with the names of at least three referees, should be sent to the Chairman of Council, Kingsmead College, 10 Saxton Road, Johannesburg, South Africa. Further information may be obtained by writing to the Chairman of Council at the above address. The closing date for the receipt of applications is 1st March 1982. All correspondence will be treated as confidential.

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Overseas continued

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Overseas continued

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EDUCATION DEVELOPMENT SCHEME A number of Awards and Bursaries are to be offered by the Overseas Development Administration to enlarge the experience of men and women from this country who have been involved with education in developing countries, and to encourage study and research into aspects of education in these countries. Applicants must be British citizens, aged under 46, with a minimum of five years' overseas education experience. (a) Awards: six months' to two years' duration. Applicants should normally have a degree or equivalent qualification. (b) Bursaries: one term or one year duration on a DES approved course. Applicants should be qualified teachers with experience in formal or non-formal education. Awards and Bursaries cover fees and provide an allowance towards living costs, books and stationery. The amount is determined by the circumstances of the candidate. Closing date for return of completed application forms: 31 March 1982 for study beginning September/October 1982. Further details and application forms from: Room E347, Education Division, Overseas Development Administration, Eland House, Stag Place, London SW1E 5DH. Please quote reference number ED 373/03/THES

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SOCIAL SCIENCE RESEARCH COUNCIL Research on the Inner City in a Changing Economy The SSRC Panel on the Inner City in Context invites research submissions as part of a research programme dealing with the Inner City in a Changing Economy. It is intended to finance a number of case studies to be organized with an overall comparative framework. The objectives and content of the studies will be formulated in collaboration with the Programme Director and the Panel. A research brief and background information are available from: Paul Winlow, Secretary, Panel on the Inner City in Context, SSRC, 1 Temple Avenue, London EC4Y 0BD. Tel: 01-363 8282, ext. 38. Closing date for applications: 1 March, 1982.

Gowns, towns in community education



Christopher Price

Throughout their history universities have flourished yearning for their ivory towers and the prickings of social conscience and between helping their students escape from the communities which nurtured them and helping make those communities work. On the whole, gown has triumphed over town, and city fathers have watched the institutions they built move up market and declare their role to be national, or even international, rather than local.

Conversely, town has through the centuries been warily suspicious of gown and whether universities today are good for the communities in which they stand is a dubious proposition; the contrast between their smart campuses and the mouldering slums which fringe them, is difficult to defend. In Britain, the role of the university in the city has been too little discussed; in the United States they plan these things more robustly. When, in the 1960s, Mayor Daley built the University of Illinois at Chicago Circle, as a great concrete bastion to prevent further black and Latino encroachment on his business quarter, the plan backfired. The politicized luminous held a series of sit-ins in the lifts of the main tower, and marooned the administrators in their ivory keep on the fourteenth floor until they got something of the open access they were demanding.

The effect of the cuts, I suspect, will be to persuade all too many universities to retreat within their citadels. But not all of them. Some, like Hull, have an adult education role written so firmly into their constitution that it is an activity almost impossible to drop; and then there is Goldsmiths College in Lewisham, Direct funded by the Department of Education and Science, yet retaining its academic connections with Lon-

don University, it has in my view the best of all worlds. High level academic work, a long experience in teacher training and art, superb work in orchestral studies, the Leabon Centre for movement and dance, which is moving into community dance, taking local youngsters and showing them they can reach the highest standards. In short, doing everything a university in the full sense of the word should be doing.

But that's not all. Goldsmiths has, within its School of Adult and Community Studies, one of the most remarkable community education centres I know of - the Lee Centre. An old building, left in the nineteenth century for the benefit of the men and lads of Lee has been transformed into a powerhouse of education, specializing in basic literacy and convivial atmosphere. They have just produced a book about themselves, much of it written by the students.

I said - written by the students. In fact, some of the students did not write it. They taped it and transcribed it. Seeing one's own words in print is, I suspect, one crucial key to that leap in confidence from semi-literacy to a thirst for knowledge and understanding.

I wish all our university institutions put the effort that Goldsmiths has put into generating a demand for their courses from the adults in their communities. Rekindling a belief in the ability of those without qualifications to reach university standards could transform the morale and social conscience of our universities.

From Goldsmiths to Leeds, where I sat in the Great Hall of the University the other day to hear Sir Keith Joseph tell us all about education at the concluding session of the North of England Education Conference. Sir Keith told us in slow convoluted verbiage - that some school teachers would have to be made comparatively redundant as a way of getting rid of teachers who were not up to scratch.

Now I have news for Sir Keith. Redundancy seldom enables any employer to get rid of those folk he wants to dispose of. Under both voluntary and compulsory redundancy, the education service will lose its best teachers, not its worst. If Sir Keith Joseph thinks some teachers are so bad they should not be teaching, he should make arrangements for them to be dismissed after proper warnings, evaluation and appeal procedures.

This procedure is impossible in universities, difficult in the schools, slightly easier in the lower ranks of the civil service and commonplace in most other areas of employment. I think there is a case for making it rather more possible in the school system; but trying to get rid of incompetents through phony redundancy schemes is intellectually dishonest, probably illegal and unworkable in the event.

Frank Abrahms, former Chairman of the Standard Oil Company, industrialist, statesman, and pragmatic man of affairs, said that the two greatest contributions America had made to the development of Western thought and institutions were the corporation and the college. He alleged that a strong and mutually dependent relationship between them would produce a resource of unlimited possibility for American society. Milton Eisenhower, former President of The Johns Hopkins University and a leading educational statesman, put the matter somewhat more bluntly when he said: "Higher education and business are basically interdependent. The one needs money to produce educated people. The other needs educated people to produce money."

The relationship between the college and the corporation is an historical one which has gone through several cycles. As originally founded in the New World, the colleges, most of them established by religious bodies, mainly depended for their support on land rents, gifts of individuals, and proprietary rights in government functions. By the mid nineteenth century, colleges, still mainly private in control, and corporations both entered periods of great growth which in some ways drew them together. For example, boards of trustees and financial support came to be drawn not from the church or large landowners but business, banking, and the law.

Following the two world wars and the growth of the land grant colleges, state universities and community colleges, public institutions supported by state and local governments replaced private colleges as the dominant educational institutions. Trustees were increasingly drawn from political life, and faculty and students gained a measure of political power expressive of the horizontal nature of most educational institutions. Intellectuals centring their lives on campuses protected by academic and other freedoms became more critical of aspects of the modern industrial society. Government and labour became new partners to both the college and the corporation as they began to draw apart from each other.

Even with growing and increasingly separate identities, the college and the corporation, in a paradoxical way, have also become more dependent on each other. Higher education draws on the wealth in large part created by and through industry, depending on industry for jobs for its graduates and on corporate taxation and private giving as a key element in its financing. Corporate support through private fund raising exceeded one billion dollars in 1980. The corporation, and indeed the nation, in turn, are increasingly dependent on the college for basic research

Colleges need links with corporations



George Rainsford

and for skilled personnel. As Clark Kerr has pointed out, "The corporate world has both less influence but more dependence on the college world than ever before. The college world, in turn, has more resource dependence on industrial production. The two worlds are more separated in their identities, yet more dependent on each other in the conduct of their activities, more suspicious yet more bound to each other for their survival, more apart in philosophical purposes and more together in mundane practice."

Yet if the words of Frank Abrahms and Milton Eisenhower are to bear fruit, it is also important to see what can be done to enhance the relationship. First, what can the college do? It should protect its independence but should exercise that independence reasonably. We are still living with the impact of the excesses of the 1960s on college campuses. The liberal arts colleges particularly should not be snobbish about their programmes since their principal justification is the pragmatic long-term usefulness of their programme. Service to society through better educated and qualified graduates is an important expectation of higher education.

The college should be careful not to assert too strongly nor believe too deeply in the moral superiority of the academic community. Analogously, while remaining a champion of the importance of the world of ideas, the college should not make excessive claims for its ability to solve the nation's problems when its intellectuals remain far removed from the responsibility of decision-

making. The college should also try to understand the nature of business and not denigrate the world of work, nor in its insistence on credentials denigrate the teaching and learning contribution which can be provided by that world's experts. Finally, the stereotypes that faculty and students have of businessmen and the nature of the economic system, including an unrealistic understanding of the profits of most companies, all need review.

The corporation in turn should understand that the college world is different. Making important contributions to the world of ideas, the college lies intellectually and politically to the left of the American or British public generally with the professoriate more dispersed from left to right than any other group in society. The corporate world is by contrast generally to the right of the public and much more internally conforming in its thinking. Equally germane, is the corporate understanding of the difference in decision-making style between the consensual self-governing processes used in the academy and the more hierarchical style used in business.

The corporation should seek to understand students and young faculty, particularly in a youth-oriented society. The cultural paraphernalia of the young are really nothing more than generational calling cards and each generation has had them in their own time. The idealism of American youth is, by and large, wholesome and is different from the ideological class radicalism of young people in Europe, Latin America, or the Far East. Moreover, since it is not supported by either local or national political structures, it tends to be long-run.

The corporation should also continue financial support of quality teaching and basic research in higher education in general and not as has been suggested, try to target corporate contributions so that they are restricted only to areas of direct "product or service interest, or areas believed to be in the hands of the "right kinds of professors". The latter is an inappropriate political test as any that might be devised by government. Finally, the corporation should not neglect to develop its own morality and to deal of its own initiative with the serious problems identified by intellectuals or by those responsible voices speaking in the public interest.

There is a new urgency in the relationship between the corporation and the college, both in England and in the United States. It is short sighted to say only that as government funds dry up, private funds from corporations become more important. Education and business will need the full spectrum of each other's talents and resources if both are to meet society's expectations of them.

LETTERS TO THE EDITOR

Figures that fit the policies

Sir, - Gerry Fowler (THES, January 8) rightly points to the double standards of the Department of Education and Science. Today the DES uses marginal costings to justify a cut in home student fees, but the purpose of this otherwise desirable exercise is to limit even further the financial room for manoeuvre open to advanced further education colleges and local education authorities. Colleges able to recruit greater numbers of students will reap only half the previous financial benefit from doing so, hence pool income will be exercising an even greater constraint on college budgets.

Four years ago the DES, under the direction of Mrs Shirley Williams, dismissed marginal costing as inappropriate or as impractical when applied to overseas students. At that time my colleague Irene Brugel and I calculated, on crude assumptions, a marginal national cost of approximately £50m for overseas students, when the DES was insisting that the aggregate total subsidy was £100m.

Polytechnic pool

Sir, - The headline and text of your article on the pool allocation to polytechnics and other colleges (THES, January 15) give the impression that polytechnics are receiving a reasonable level of financial support. However, this impression derives from the percentage reduction in the polytechnic grant and takes no account of the historic levels on which they are based, or the successive reductions in allocations over the past four years.

Natfhe election

Sir, - I am puzzled by David Jobbins' article on the National Association of Teachers in Further and Higher Education vice presidential election (THES, January 8). Surely under a system of the single transferable vote there is no advantage at all in one faction's having two candidates as opposed to one. The point of this system is that it makes no difference whether a party or a group has one, two or 20 candidates, since there is no danger of a split vote (a point which has been made many times recently about the SDP/Liberal Alliance). If it is true that the votes of Ms Grant and Mr Grace

Linguistics

Sir, - I feel uneasy about the way in which David Lightfoot (THES, January 1) associates me with his criticism of John Lyons' role in British linguistics. In reviewing one of Lyons' recent books I said that Lyons had played a large part in the growth of linguistics in this country; I certainly did not say that he used his influence to promote superficial surveys.

Lightfoot may be right to detect a degree of superficiality pervading much British linguistics, but I do not believe personalities are to blame; it is readily explained, eg by the fact that very few students in British universities are taught linguistics as more than a part-time subject for three undergraduate years or less. I wonder whether this fault is worse than its opposite which is prevalent in America and continental linguistics, namely fine-drawn theorizing which loses contact completely with any empirical basis.

English please

Sir, - As a subscriber to THES since its first issue I have to confess that I increasingly find large tracts of it unreadable. Thus, though I am not unfamiliar with the field of social policy, I could not get beyond the first paragraphs of the article by Peter Taylor Gooch, "The Politics of Caring" (THES, December 25). What, for example are we to make of...

"The Foucauldian pun of precision to the subject provides a precise account of the reentrant trajectory of social administration's theoretic liberation - from its atheoretic heritage?"

Will someone tell me, please? In English. Yours faithfully, MAX MORRIS, 44 Coolhurst Road, London N8.

Thus, despite the technical complications, the marginal cost calculations were perfectly possible.

The implications are clear. The political laundering of information and data progressively displaces educational policy debate. But is there a hidden agenda? Is further and higher education like other sectors merely being sacrificed on the altar of the Treasury's anti-inflation programme and the Government's policy of priorities? Or is it the preliminary step towards a more radical shift in the structure of the educational system, the nature of courses offered, and even eventually in the methods and approach to teaching and research? It is certainly not difficult to construct the latter scenario from various statements and writings of Sir Keith and the radical right. On the other hand it is rarely the case that governments are ever so ideologically coherent as to be able to pursue such objectives systematically. It is also the case that in FE and HE especially there are many mediating

In order to appreciate the very unfavourable position of polytechnics, their overall support per full-time equivalent student may be compared with the universities. The 1982/83 pool allocation, plus fees for the 145,000 full-time equivalent home students in the polytechnics is to be £451m (1981/82 prices). The resource per full-time equivalent student in polytechnics is therefore £3,100, which compares with a cost per student of approximately £4,200 in the universities. This is not to suggest that universi-

ties are unjustified in their plea that they are being particularly harshly treated. However, it surely indicates the even greater inadequacy of provision in the polytechnics. It also demonstrates that the former Secretary of State's guarantee that there would be even-handed treatment between the polytechnics and the universities, has not been fulfilled. Yours faithfully, RAY RICKETT, Committee of Polytechnics, 309 Regent Street, London W1.

will be redistributed by the supporters of the less successful candidate to the other, then if only one of them stood he or she would receive all the votes in the first place. It would be interesting to know from what source the descriptions of the political leanings of the candidates were derived. If Ms Grant and Mr Grace represent the "broad left", and Ms Farrell represents the "extreme left", who represents the "right", since we are told that the fourth candidate is a "moderate"? Yours faithfully, D. R. BARTLETT, Member, Natfhe East Midlands regional executive committee.

As for the suggestion that the British linguistic establishment is too eclectic, at present a number of British linguists are ceasing to support the Linguistics Association of Great Britain because they perceive it to be concentrating on an unduly narrow segment of the full spectrum of linguistic studies. Lightfoot's picture of serious British linguists being forced into exile abroad by a hostile establishment is particularly overdrawn. British academics in all subjects have benefited themselves by making overseas appointments throughout the twentieth century; the traffic is not wholly one-way (Roger Lass is one eminent linguist who has moved in the opposite direction), and if this particular "trade balance" shows a surplus we might well see that as a tribute to the quality of the "British product". Yours faithfully, GEOFFREY SAMPSON, Richmond House, Lingleton, Yorks.

SSRC for and against

Sir, - May I make the point that one would need to be either deluded or perverse not to recognize as literally true what Paul Flather reports (THES, January 8) that "Sir Keith also believes there is a sort of systematic bias towards the left in the kind of research supported by the SSRC".

One would feel a good deal happier about both the Social Sciences Research Council and the social sciences generally if they defended their corner rather than pretended things were otherwise. Yours faithfully, TOM CROSS, Chester College of Higher Education.

Per capita

Sir, - Your contributor Eric Claverling (THES, January 1) may well feel that the current phrase per capita contains an illogical plural. If so, he should either substitute the correct singular per caput or keep to what seems to have become standard usage. One would hate to see modern linguists go the way of the many scientists whose fond "data" used as a singular, lags on our ears. Professor O. A. W. DILKE, University of Leeds.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary. Yours truly, JOHN REX, Director, research unit on ethnic relations, Aston University, Birmingham.

Ordinance survey

Sir, - You reported (THES, January 8) that Mr Heselton may be trying to sell off the Ordnance Survey. In passing, your list of academic users of OS maps omitted the numerically largest group - geographers. Every geography department in the country necessarily keeps stocks of some OS maps and they are a vital component of fieldwork and much geographical research.

OS maps form a national archive: since 1801, they have recorded the landscape of Britain and changes in it. The replacement cost of this archive has recently been authoritatively estimated at over £500m and most commercial map making firms already rely upon part of it as a source from which their own maps are derived. Academics, by and large, are only interested in 1/10,000 and smaller scale maps, which constitute only about 5 per cent of the maps produced by the survey; this, however, is also precisely the scale range in which most commercial map makers work. There is good reason, therefore, to believe that the proposed sale of all or part of OS is of real significance to the educational community.

The likely effects of privatization are obvious. Sales of map sheets vary enormously in response to local population and the number of visitors to an area: thus, to maintain optional coverage - even at scales as small as 1/10,000 and 1/25,000 - is a financial burden which no commercial publisher would be able to sustain from his own resources. The most likely consequence of privatization would be mapping on demand, that is producing a patchwork quilt of maps of different scales, of varying date and, probably, of varying content. Only with a Government subsidy analogous to those for rural transport could national consistency and quality be retained. Selling off OS therefore means either a much diminished archive or government subsidizing the operation. In the short term at least, both results might well occur.

In the last three years, Ordnance Survey have adjusted rapidly to a more commercial environment. The case for penalizing an organization acknowledged by ministers to produce excellent products and already demonstrating adaptation to change is not obvious. Yours faithfully, Professor D. W. RHIND, Department of geography, Birbeck College.

tics came on to the educational scene, the AUT was campaigning for the extension of educational opportunity. It is sickening to read and to listen to the know-all pontificating about this and that aspect of the universities, university staff and their organizations. When the educational media is filled with opinions based on half-truths and lack of knowledge, when people who are not within a university try to analyse a complex situation in a slick way, is it any wonder that AUT has become a strident in defence of the jobs of its members which some would gladly dispose of with a malicious glee disguised as an erudite opinion? Some radio and television commentators are no better. Time and time again when an AUT spokesman has been interviewed for one programme or another, almost inevitably, the question asked is: "With so many people being declared redundant these days why should university staff escape the same fate?" To such a flip question, it is only possible to give a flip answer "If three million people have had their throats cut, is that any reason for barring our members throats so that they can have them cut too?"

Training boards

Sir, - As recently pointed out (THES, December 25) most critics of the Government's proposals for a youth training scheme have focused on the questions of allowances and social security implications. However there are also important questions concerned with the quality of training which the new scheme will provide or encourage.

In certain key economic sectors there has existed for several years a modern standards-based system of apprentice training, thanks to the much-maligned industrial training boards. In engineering, a key part of the modern apprenticeship is that the whole first year is taken up by off-the-job training. Is it possible that incentives offered to sponsors under the new youth training scheme would encourage employers to substitute vocational trainees for first year apprentices?

While the White Paper lists the five main elements of the proposed training year it has little to say about the standards to which young people will be trained. Experience from the continent suggests that gaining a certificate may not help young people find employment, unless the certificate reflects the skill which employers regard as appropriate. In this respect it is very unfortunate that the Government has decided to scrap 16 boards previously responsible for developing standards appropriate to their industries. Yours faithfully, JOHN FAIRLEY, Research Fellow, Joint Unit for Research on the Urban Environment, University of Aston in Birmingham.

It may well be that in the months ahead some battles will be lost as well as won. doing it is also defending the interests of the university system and everything that it stands for - compassion, humanity and a standard of education that can only be maintained by the people who work in the system. Yours faithfully, Laurie Sapper, The author is general secretary of the Association of University Teachers.

Union View

No apologies for defending tenure

In recent months the Association of University Teachers has been lectured, hectorated and chided for the fierceness with which it proclaims the need to protect members jobs a first priority.

From some vice chancellors through the media commentators to THE THES, we are told that we should give more prominence to matters such as "the future health and well-being" of the universities or the lost opportunities for young people or the importance of preserving excellence (whatever that might mean). Tenure has been treated almost as a dirty word and there seems to be a resentment that university teachers (in fact only about 7 per cent) have what in practice millions of other employees - civil servants, health service and local government workers, etc - enjoy.

The AUT, makes no apologies for its policy or its attitudes. Time and time again it has stressed that universities are composed of people and are about people and their relationships to each other.

If a university is callously prepared to sling people on to the dole queue in the interests of some ill-considered ideology about future viability and the need to maintain an establishment status quo, then the AUT wants no part of this attitude. Of course we see the need to provide the opportunities for a higher education for the growing generations. Over the past two decades and long before most of our present cri-

sis came on to the educational scene, the AUT was campaigning for the extension of educational opportunity.



It is sickening to read and to listen to the know-all pontificating about this and that aspect of the universities, university staff and their organizations. When the educational media is filled with opinions based on half-truths and lack of knowledge, when people who are not within a university try to analyse a complex situation in a slick way, is it any wonder that AUT has become a strident in defence of the jobs of its members which some would gladly dispose of with a malicious glee disguised as an erudite opinion?

Some radio and television commentators are no better. Time and time again when an AUT spokesman has been interviewed for one programme or another, almost inevitably, the question asked is: "With so many people being declared redundant these days why should university staff escape the same fate?" To such a flip question, it is only possible to give a flip answer "If three million people have had their throats cut, is that any reason for barring our members throats so that they can have them cut too?"

The truth of the matter is that if the AUT had not campaigned on behalf of its members' jobs over the past year and if many senates had not had the guts to show their revulsion at plans which would involve compulsory redundancy, then hundreds of university staff would now be signing on for their dole money.

It may well be that in the months ahead some battles will be lost as well as won. doing it is also defending the interests of the university system and everything that it stands for - compassion, humanity and a standard of education that can only be maintained by the people who work in the system.

Yours faithfully, Laurie Sapper, The author is general secretary of the Association of University Teachers.

Handwritten note in the left margin: "The author is general secretary of the Association of University Teachers."

Wednesday

It is a warm day with just the thinnest veil of cloud and, with term virtually at an end, one feels singularly elated, except for one small matter. Petrol is in very short supply in Zimbabwe at the moment. The early part of the day is thus spent skirting around the filling stations. Finally I manage to get five litres, sufficient to get me from my flat to my office and back again. Once home, I ring a taxi and on my way to the airport en route to South Africa (or "The Regime" to give it its optimistic Southern African appellation).

Thursday

An early start as today is the beginning of my lecture in South Africa to deliver a paper at a symposium on science being held at the headquarters of the country's prestigious Council for Scientific and Industrial Research. The first day's proceedings have gone well. I am quite impressed with the range and depth of work in the field of science which is being done here. Also, I have the pleasure of meeting one of the leading scientists in the field, Professor Robert Munn of the University of Witwatersrand.

Don's diary

Wednesday. I muse on the idea that it is the main purpose of international conferences - to hobnob with the "greats" in one's specialist area. "At the end of the working day we relax and engage in amiable chit-chat in the plush, Old Club Hall at the University of Pretoria, South Africa's largest university.

Friday

Fifteen hours and 35 papers later (not forgetting three fine lunches, dozens of cups of coffee and layers of cheese and biscuits), the symposium comes to a formal end at 6 pm and delegates start on their journey back to base. For the vast majority it is somewhere in "The Regime" but for others it is Austria, Germany, USA, Zimbabwe, etc. I leave in the company of a physics professor for a short, late evening tour of Pretoria city centre.

We board the SAA coach for Johannesburg Airport and thence to another one from there to Johannesburg city centre, where I check in at The Diplomat, a simple 3-star hotel in a noisy part of the city. I try to unwind by tuning the local radio to local stations but all I get is either Afrikaans news programmes or the raucous monotonies of mass-produced disco music. So I switch off and finish reading the latest novel by one of South Africa's leading writers, Nadine Gordimer.

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Saturday

This morning, which starts with the golden rays of brilliant sunshine streaming across the room at 5 am, I go on an extended tour of the Johannesburg city centre. I find that Johannesburg is all the clichés usually associated with big cities - sprawling, cacophonous, crime-ridden, etc but it is also the sum of all that is wrong with South Africa - apartheid practices, uneven development and unequal opportunities. In short, the city, and indeed the country, is a shambles, a place where the "libulous" reply to a

Sunday

straightforward question is not uncommon. Two English girls and I rent an Avis car and two and a half hours later we are at Sun City, that oasis of conspicuous consumption incongruously set in a desert of deprivation, tucked away (some say, conveniently, via 4 vias South Africa's peculiar "morality" laws) in the heart of Bophuthatswana, one of the so-called independent homelands. It really is quite beautiful - dashing buildings, spacious swimming pools and always graced by some or other big name in the world of entertainment (Frank Sinatra, Sha Na Na, Shirley Bassey have all been there slightly). But no one with even the faintest of social consciences can feel comfortable being here.

We return to Johannesburg, lunch and I spend the rest of the day going through the Sunday papers. I finally settle for a detailed reading of the Sunday Times, which is quite an eclectic publication.

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Monday

Today I spend at the faculty of engineering at the University of Witwatersrand. (WitWit). This is arguably South Africa's best university. Members of staff in departments of metallurgy and mechanical engineering take me on an ex-

clusive tour. It is a very progressive, vibrant and productive environment, with strong links with industry. A number of endowed chairs - the Transvaal Industries Professorship of Mechanical Engineering, the Chamberlain Professorship of Extractive Metallurgy. I am quite impressed with the range of research projects in progress - in fracture mechanics, roll dynamics, solids transportation, solar energy.

The day at WitWit ends with a sumptuous lunch at the Faculty Club. Through the meal my hosts and I converse on a diverse range of topics. These include how Africa "to the north" sees South Africa; the problems of being an Englishman in a dominant country and the role of universities in South Africa today. On this last topic conversation focuses on the recently delivered inaugural speech of the newly-installed chancellor of the brand new Medical University of South Africa who called for complete autonomy of the country's universities.

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On the whole, though, we are a cheerful and grateful lot - for, inter alia, not being university lecturers in cut-throat, shivering and foggy Britain.

Yours faithfully, Gladus Lewis, The author teaches mechanical engineering at the University of Zimbabwe, Salisbury.